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MEMBER, BUSINESS PUBLICATIONS AUDIT
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A Miller Publication
Business Journalists Since 1873

Vol. 7 OCTOBER 24, 1960 No. 32

News Briefs . . .

(Complete Stories Inside)

ARMOUR & CO., Chicago, has announced plans for a $60 million agricultural chemical facility expansion. Included in the plans are the construction of fertilizer operations at Cherokee, Ala., and in Polk County, Fla. William Wood Prince, Armour's president, said the increased facilities would triple the company's nitrogen and phosphate output. **Story inside.**

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A GRANULAR CHEMICAL conference was held at the Gandy Co. facilities in Owatonna, Minn. Representatives from some 19 basic manufacturing firms in the pesticide field attended the meeting. **Story inside.**

●

A $30 MILLION loan was approved by the U.S. government to Hindustan Chemicals & Fertilizer, Ltd., to cover the cost of building a fertilizer plant at Trombay, near Bombay, on the west coast of India, announced the Development Loan Fund. **Story inside.**

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THE ASSOCIATION of American Fertilizer Control Officials and the Association of American Pesticide Control Officials met recently in Washington. Croplife staffer James W. Miller reports on this event in this issue. **Story inside.**

●

IF WORLD FOOD production is to keep pace with population increases, a five-fold increase in the output of chemical fertilizer will be needed, says Dr. F. W. Parker, head of the technical department of the Food and Agriculture Organization. **Story inside.**

●

PLANS FOR THE 37TH annual convention of the California Fertilizer Assn., to be held Nov. 13-15 in Coronado, Cal., are discussed in this issue of Croplife. Principal speakers and panels are covered. **Story inside.**

LOADING PRODUCTION—Recently-produced granular fertilizer is loaded onto truck at Lone Star Phosphate Co., Nacogdoches, Texas. Plant has enjoyed a steadily-increasing tonnage of production during the past few years, and is said to be one of the most modern small facilities in Texas. Story page 4.

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Accepted as Controlled Circulation
Published Bi-Weekly by The Miller Publishing Co.
Minneapolis, Minn.

Subscription Rates:
$5 for 1 year; $9 for 2 years

OPPORTUNITY FOR QUESTIONS . . .

Fertilizer Industry Suppliers and Users To Talk About Uniformity at Round Table

WASHINGTON—Final program plans have been completed for the 10th Fertilizer Round Table meeting scheduled to be conducted at the Mayflower Hotel here Nov. 2-4. The three-day agenda will feature talks on storage and handling of various materials used in fertilizer production, ammonium phosphates, nitrates, sampling procedures, instrumentation in the plant, and preneutralization.

Highlight of the Round Table is expected to be the panel discussion on uniformity, featuring speakers representing raw material producers and also users of these products. H. L. Marshall, Olin Mathieson Chemical Corp., Baltimore, Md., will keynote this discussion with a talk on "Why Uniformity?", and a question and answer session is expected to spark this portion of the program. In discussing the meeting, Mr. Marshall pointed out that this year's Round Table offers the opportunity for users to present their suggestions for more uniformity in raw materials. He added that this occasion will mark the first time that all specifications for raw materials for the industry will be available at one time. Questions from the audience will be invited.

The panel discussion will be composed of two groups: users and raw material suppliers. The latter panelists will cover nitrogen in the form of liquids and solids; phosphates, both single and triple superphosphate; and potash.

Communication problems in instrumentation in fertilizer production will be handled by Joe E. Reynolds, Davison Chemical Div., W. R. Grace & Co. This portion of the program will include case histories and reports of new developments in instrumentation.

Automatic sampling techniques will be described by Jim Archer, International Minerals & Chemical Corp., while Ed Blocker, W. R. Grace & Co., will point up factors involved in statistical evaluation.

The final sessions on Friday, Nov. 4, will feature a discussion on preneutralization by Albert Spillman, Fertilizer Mfg. Co-op., Baltimore.

A business meeting of the Round Table will conclude the 1960 sessions, Mr. Marshall said.

Armour to Spend $60 Million On Agricultural Chemical Expansion

CHICAGO—Armour & Co. has announced plans to erect a multi-million dollar fertilizer plant at Cherokee, near Sheffield, Ala.

Armour directors, at a meeting in Chicago, approved agricultural chemical facility expansion plans totaling $60 million to include the Cherokee plant and a new plant in Polk County, Florida.

"First year output of the facilities," said William Wood Prince, Armour president, "will make possible production of nitrogen and phosphates at about three times the current levels."

The Cherokee plant will produce ammonia, nitric acid, urea, nitrogen solutions, ammonium nitrate and other ammonia derivatives. It is expected that the plant will employ between 200 and 250 persons.

Construction of both plants is scheduled to begin immediately with production slated to start in 1962.

Headquarters for the Armour Agricultural Chemical Co. are in Atlanta, Ga. W. E. Shelburne is president. He also is vice president of Armour & Co.

Mr. Prince added, "The use of chemical fertilizers in the area served by Armour should expand over the next five years at a rate of three to four times that of the population growth.

"And, therefore, our natural field for expansion, in addition to the particular products, will enable the fertilizer marketing division to upgrade its products in the higher chemical analysis field and enlarge its sale of straight fertilizer."

Mr. Prince emphasized that Armour investments in the company's expanding chemical industries, which include agriculturals, industrial chemicals, pharmaceutical soaps and detergent assets would for the first time exceed its investments in abattoirs and meat producing facilities.

He added that Armour's chemical program contemplates increasing production of ammonia phosphate at Sheffield, using raw materials from the Florida plant.

DIVISION FORMED

CHICAGO—A newly-formed Food and Allied Industries Division has been established by the American Society for Quality Control. The new division of ASQC will concern itself with methods for developing and maintaining quality standards by firms engaged in food raising, food manufacturing, food brokerage and food distribution.

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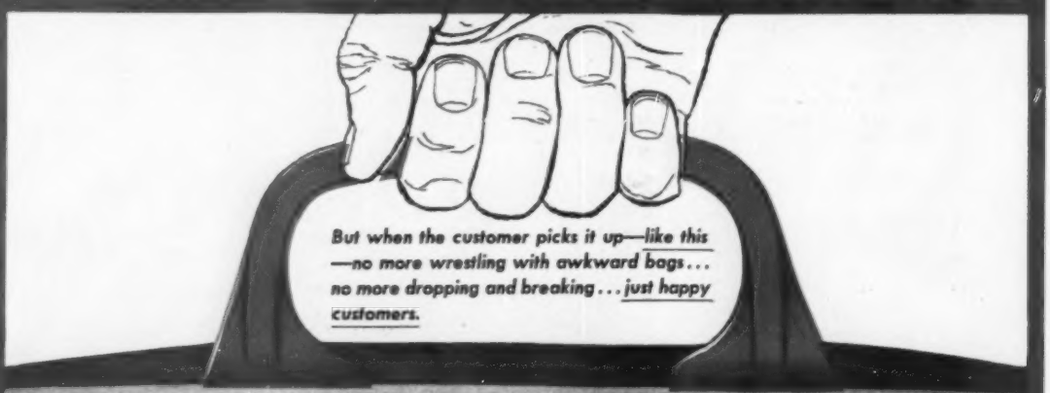
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U.S. Approves $30 Million Loan For Indian Plant

WASHINGTON — The Development Loan Fund announced the approval of a U.S. government loan of $30,000,000 to Hindustan Chemicals and Fertilizer, Ltd., a government sponsored corporation, to cover the foreign-exchange cost of building a $58,000,000 fertilizer plant at Trombay, near Bombay on the west coast of India. Details of the loan agreement remain to be negotiated.

The local-currency cost of the Trombay plant, equivalent to approximately $28,000,000, is to be financed by a loan of rupees owned by the U.S. government. Thus Trombay will be the first major fertilizer plant in India to be financed entirely by the U.S.

In considering the loan, the DLF took cognizance not only of India's great need for increased agricultural production, but also of the Indian government's announced intention to enlist the cooperation of private enterprise to help produce further fertilizer supplies, a DLF report stated.

To meet the needs of a rapidly increasing population, India's third "Five Year Plan" calls for increasing agricultural production by 30 to 33%. The Government Planning Commission said in the recently issued draft outline of the plan:

"The development of agriculture . . . holds a key to the rapid economic development of the country. . . . An industrial revolution cannot be achieved without a radical improvement in agricultural productivity."

The increase in agricultural production is to be accomplished in part through increased use of chemical fertilizers. The plan contemplates tripling the output of nitrogenous fertilizer and increasing the output of phosphatic fertilizer by six or seven times.

The Indian government has announced its intention of enlisting the cooperation of privately owned and operated fertilizer plants in the achievement of these production targets. Five sites have already been identified as suitable for private fertilizer plants, and other sites are under consideration. A number of private firms, including some U.S. firms, have advanced proposals to build installations at some of these sites, and their proposals are under review by the government of India.

The Indian government, in a recent letter to the Development Loan Fund, indicated the estimated requirements for foreign-exchange financing for these private plants and stated that it would welcome a decision by the U.S. government to assist in financing private investment in fertilizer plants in India. In reply, the DLF stated that although no commitments could be made in advance of the receipt of specific proposals, it would give sympathetic attention to loan applications in the fertilizer field.

The $58,000,000 Trombay factory will consist of four major plants. These will yield ammonia and nitric acid as intermediary products, and urea and nitro-phosphate fertilizers as final products. The principal raw materials will be refinery gas and naphtha from nearby petroleum refineries, and imported phosphate rock. The annual production of the factory is expected to be 116,000 tons of ammonia, 105,000 tons of urea, 105,000 tons of nitric acid, and 300,000 tons of nitrophosphate.

JOINS ASSOCIATION

SAN FRANCISCO—The Colloidal Products Corp. of Sausalito, Cal., has joined the Arizona Aerial Applicators Assn. as an associate member.

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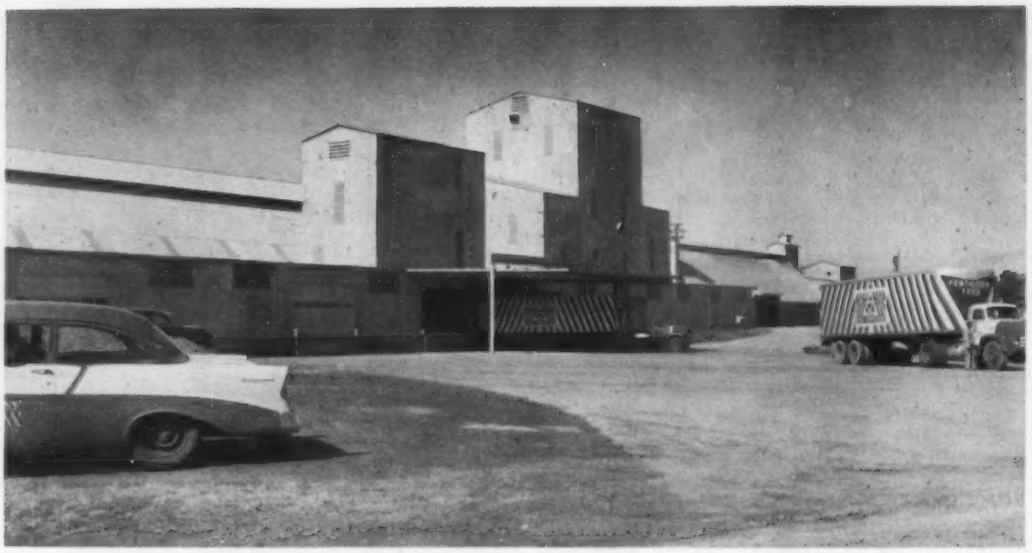

THE LONE STAR Phosphate Co. is located just outside the city limits of Nacogdoches, Texas. Large trucks, shown in picture, have dual compartments and are used to haul feed and fertilizer to the same dealers.

Aggressive Promotion Pays Off in Increased Tonnages for Texas Phosphate Company

By JESS BLAIR
Croplife Special Writer

The Lone Star Phosphate Co. of Nacogdoches, Texas, has shown a steady increase in tonnage the last few years, despite the fact that many east Texas farm fields have been turned back to grass.

This has been accomplished by aggressive promotion and selling and by a constant improvement of the plant's facilities and production methods. As a part of the Texas Farm Products Co., which also manufactures feed and raises poultry, the fertilizer plant has been keeping pace with the other departments.

Two years ago the owners added a fume incinerator to dispose of obnoxious odors, and last year installed additional storage for acids. To take care of increased demand, the plant has doubled its bagging capacity.

The firm ships in phosphate rock, acidulates the rock with acid and makes various grades of phosphate for both row crops and pastures.

ED GIBSON, superintendent of the Lone Star Phosphate Co., Nacogdoches, Texas, is shown here in the small office where he works. Much of his time is spent inside the plant supervising operations.

Some of the more popular mixtures are 10-20-0 and 6-12-6 for the immediate area, while an increasing amount of 16-20-0 and 12-24-12 is being made for the rice farmers of southeast Texas.

"We've got one of the most modern small plants in the state," says Ed Gibson, plant superintendent. "We have been cutting down our manpower by adding more machinery and checking our methods of production. We are gearing our tonnage to sales, and this gives us a busy season and a slack period.

"During the months of March, April and May, we may ship out 400 tons daily by truck and a car or two by rail. This period will account for two-thirds of our sales, with the rest coming during the other months."

The phosphate rock and muriate of potash are shipped in by covered hopper cars, and the other ingredients in box cars and tank cars. After the rock is processed by the use of acid, the finished products are stored in 10 large bookcase bins which hold 600 tons each.

In preparation for bagging, the fertilizer is picked up by Payloaders and sent through the double bagging unit. After being bagged and sewed, the sacks are sent by endless chain off the platform into covered trucks.

Off-size pellets are separated and sent to the hammermill for re-grinding, while the fine material is sent into the re-cycling system. Mr. Gibson uses about 30 employees in all, with two men staying on the bagging unit where one bags and the other sews at the rate of 18 sacks per minute. A small amount is shipped in bulk form, but 95% is bagged.

The plant has a small laboratory where acids are tested but, for a complete analysis, Mr. Gibson sends material to a commercial laboratory. He says the company has equipment for a complete laboratory, but has been too busy to get it set up yet.

One saving in hauling is made by sending out fertilizer and feed in the same delivery truck with livestock and poultry feed. The Texas Farm Products Co. has a large fleet of trailer-trucks which serve dealers and large farmers in east Texas and Louisiana. In addition to regular feed and fertilizer dealers, the firm also sells a large quantity of both products through country stores.

Part of the increasing sales can be attributed to the company's willingness to make quick deliveries day or night. The rice farmers put on fertilizer by the use of airplanes and often demand immediate delivery. The company can load three trucks at one time, and dispatch them to the airfields on a few moments' notice.

The safety program of the plant is under the direction of the personnel manager who co-ordinates all the departments of the company under one plan. He checks closely with Mr. Gibson and, together, the two of them have achieved a very good record in the avoidance of accidents. The company finds that experienced employees are more careful and have fewer accidents. By giving the workers paid vacations, retirement plans and fringe benefits, there is hardly any turn-over of personnel. In fact, the newest full-time employee at the plant has been with the company for eight years.

The other branches of the main company help deploy part-time workers from one department to another, and enable the fertilizer plant to keep experienced employees year after year.

The fertilizer plant was the original part of the Texas Farm Products Co. and had a very modest start. Back in 1929, M. S. Wright, who worked as a fertilizer salesman on the Atlantic Coast, decided that east Texas was an ideal spot to locate a fertilizer plant. Borrowing $1,800 on his home, he migrated to set up a small fertilizer mixing plant and was soon in business.

The business was increased until today the Texas Farm Products Co. employs 500 people and is known throughout Texas. The founder is now semi-retired, and the business is managed by his four sons, Joe, Tom, Dick and M. S. Wright, Jr.

The fertilizer superintendent, Ed Gibson, was chosen after being screened from a large number of applicants a few years ago. Mr. Gibson is a chemical engineering graduate of North Carolina University, and had worked 10 years for fertilizer companies before being called to manage the Lone Star Phosphate Co.

"It was a good move for me," he said, "because there is a big opportunity for fertilizer in this area of high rainfall and worn-out soils. Production and selling go hand in hand, and in this area our farmers are still using only a fraction as much fertilizer as is needed. So we have a long way to go before reaching a sales saturation point."

BOOKCASE BINS at the Lone Star Phosphate Co. hold 600 tons of finished fertilizer each.

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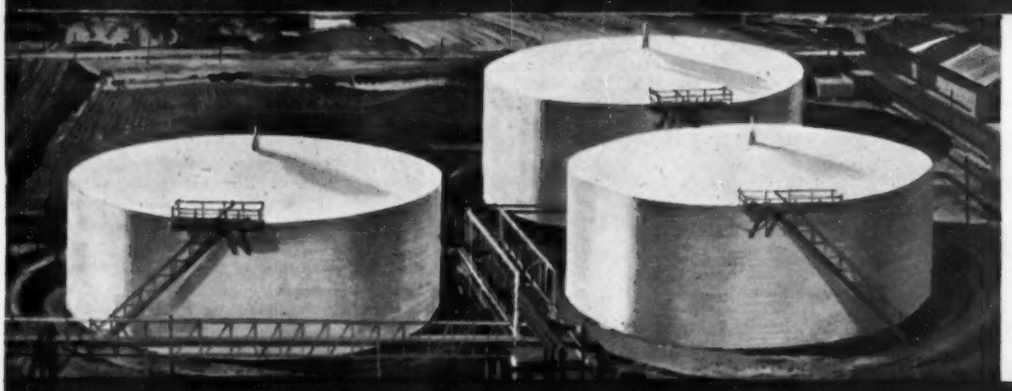

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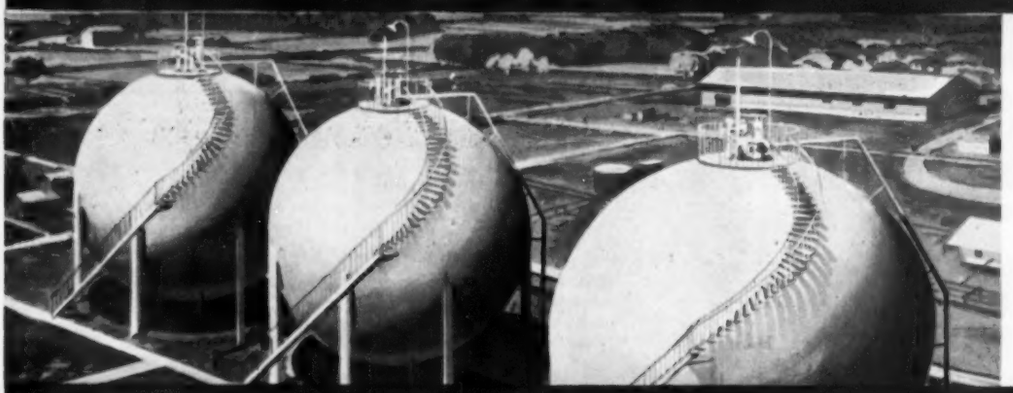

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Control Officials Told Future Farmers Will Want More Efficient Fertilizer Use

By JAMES W. MILLER
Croplife Staff

WASHINGTON—Farmers in the future will be interested in more efficient use of fertilizer and this means they will demand more services, Dr. Ralph L. Wehunt, TVA, Knoxville, Tenn., said in discussing soil tests before the Association of American Fertilizer Control Officials here Oct. 14.

The question is—who will provide these services? Dr. Wehunt believes that extension workers and county agents will continue to offer special assistance, but private services are coming more and more into the picture.

The meeting, which was attended by a good number of industry personnel as well as representatives from the state control offices, covered the changes in agriculture and how fertilizer technology and services were moving forward to meet the new demands of commercial agriculture.

Dr. Charles E. Kellogg, USDA, Washington, described the changes taking place in agriculture and pointed out the many areas in the world where these new ideas can be applied for general improvement of food supplies. Increased efficiency of farm production is not dependent on fertilizer alone, Dr. Kellogg stated. It is a number of interactions that must be applied to the problem:

1. Proper balance of plant nutrients.
2. Adequate supplies of water and air in the root zone.
3. Proper varieties of seed with the genetic ability to respond.
4. Adequate protective measures against insects and animals.

The success of agricultural progress in the underdeveloped areas of the world, in addition, depends on (a) marketing knowledge, (b) sufficient credit and (c) adequate transportation, Dr. Kellogg declared.

"It's safe to say that over 2 million soil tests are taken annually now in the U.S.," Dr. Wehunt said. A number of problems in the area of soil tests were then listed by the speaker:

1. Financing—A small fee of about $1 per sample can be charged; the costs can be covered by a special appropriation, or through proceeds from a fertilizer tonnage tax.

2. Seasonal Rush—Despite means to avoid it, testing agencies are swamped with work in the spring, increasing the chances of providing information after it's too late to be of use. Do our growers realize tests can be made off-season so long as the soil isn't too wet or frozen?

3. Organization of laboratories—The question of county versus regional or state laboratories will never be settled. Some farmers need the personal contact of the county agent, but on the other hand regional laboratories have more personnel and better facilities to do the job.

4. Calibration of conditions—The test is not the whole answer; there must be a correlation of these results with temperature conditions and type of crops to be planted.

5. Proper procedures for collection of samples—Farmers need to be properly educated on sample-taking, and in some cases the county agent or dealer can assist.

6. Area summaries—For general information in counties and regions there should be summaries of recommended grades and ratios in order to answer questions where personal tests have not been made.

Charles Marshall of Ottawa, Canada, was elected president of the AAFCO, succeeding S. B. Randle, New Brunswick, N.J. Vice president is John Kuzmeski, Amherst, Mass., and re-elected secretary-treasurer was Bruce D. Cloaninger. The executive committee is composed of the officers plus two holdover members, Robert Guntert, Topeka, Kansas, and R. C. Wetherell, Bozeman, Mont., and two new members, W. L. Baker, Columbia, Mo., and H. J. Fisher, Storrs, Conn.

In his address to the association Mr. Randle reiterated the goals of the group as expressed last year by former president F. W. Quackenbush, Lafayette, Ind.: (1) Tonnage reports from each state, (2) regulate custom mixing and blending, (3) encourage research, (4) standardized procedures in state and industrial analytical laboratories, (5) improve uniformity of products, (6) study basic physical facts regarding segregation of plant food mixtures, (7) more laboratory cooperation with the AOAC, and (8) elemental guarantees for all plant nutrients continue to be objectives before the control association.

The amount of bulk shipments of fertilizer has doubled in the five-year period from 1954, according to a report by Walter D. Scholl, USDA, Beltsville, Md. By 1959 about 19% of all fertilizer was moving in solid or liquid bulk, according to Mr. Scholl who released an extensive report on trends in all the states.

Another report of interest was that on non-farm use of fertilizers by A. L. Mehring, formerly of the USDA, Beltsville. Mr. Mehring is directing a personal sample survey which is intended to reach 10,000 consumers by the time the project is completed. So far, Mr. Mehring stated, only about half the interviewees indicate they have used or are using fertilizer. They estimate around one million tons of fertilizer is sold in the non-farm market; much of that in small packages through all types of retail establishments. Preliminary summaries of several phases of this survey have been published in the Plant Food Review, published by the National Plant Food Institute.

AAPCO OFFICERS

WASHINGTON—A pesticide control officials' workshop was the main feature of the Association of American Pesticide Control Officials meeting at the Shoreham Hotel here Oct. 12-13. The forum which covered various problems arising from pesticide regulations in the various states was moderated by A. E. Thomas.

E. Russ Winterle, Tallahassee, Fla., was elected president of the AAPCO, succeeding J. D. Patterson, Salem, Ore. New vice president is Robert Guntert, Topeka, Kansas. A. B. Heagy who has served as secretary-treasurer will continue as treasurer and the new secretary is Paul Irwin, Richmond, Va. Two new members of the executive committee are C. Osgood of Maine and Robert Rollins of California.

In a discussion of future dates and meeting places for the convention, the consensus was to continue to hold meetings in conjunction with the Association of Official Agricultural Chemists. The Association of American Fertilizer Control Officials and the Association of American Feed Control Officials are considering the possibility of holding their meeting concurrent with the Animal Nutrition Research Council, which opens the prospect of future meetings of these groups in Chicago. All companion associations are attempting to relieve the complications of numerous coinciding and conflicting meetings during the week the control officials and chemists are in Washington for the series of annual conferences.

Cooperative to Build Anhydrous Ammonia Plant in Nebraska

HASTINGS, NEB.—The Consumers Cooperative Assn. has announced plans for the construction of a multi-million dollar anhydrous ammonia fertilizer plant near here.

According to Bruce H. McCully, CCA general manager, plans call for production of 150 tons of anhydrous ammonia a day. The facilities will include tanks for storage of 30,000 tons of anhydrous ammonia at atmospheric pressure.

The Hastings plant, Mr. McCully said, will provide a second source of anhydrous ammonia for cooperatives that get this form of fertilizer through CCA. Since 1954, cooperatives in the Nebraska area have been using products of the cooperatively-owned plant at Lawrence, Kansas. CCA owns 75% of the Lawrence plant.

At the same time, the CCA announced that fertilizer blending centers will be established at Eagle Grove, Lake City and Marathon, Iowa, and Scottsbluff, Neb.

New plants will be built for each of the last three. At Eagle Grove the equipment is being installed in the fertilizer-mixing plant which is already there.

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Synthesis of Insect Attractant Reported

WASHINGTON — An important gain in man's fight against insect pests has been made with the first reported synthesis of an insect attractant that occurs naturally in the female gypsy moth, said the U.S. Department of Agriculture.

This discovery has also made possible, for the first time, the synthesis of unlimited quantities of a related chemical, which can be manufactured at low cost. It will be used in large-scale studies to determine the best way to employ such an attractant in controlling gypsy moths.

Pest control officials of USDA's Agricultural Research Service say that experiments will be conducted, for example, to learn whether male moths can be attracted and destroyed in sufficient numbers to reduce infestation. The low-cost material also will permit workers to increase the number of traps used in gypsy-moth surveys, which may enable them to determine more accurately the limits of infestation, thus reducing the areas that must be treated with insecticides to control or eradicate this pest.

USDA Starts Large-Scale Boll Weevil Experiment

WASHINGTON—A large-scale experiment to destroy boll weevils as the insects prepare for hibernation will be conducted in several southern states this fall, the U.S. Department of Agriculture reported.

The experiments will be made cooperatively by USDA's Agricultural Research Service and the agricultural experiment stations in Texas, Mississippi, Louisiana and South Carolina, with the financial assistance of the National Cotton Council.

Designed to strike the boll weevil at a weak point in its life cycle, the experiments will test a new method for controlling, and perhaps eradicating, this major pest of cotton.

At this season, a small percentage of weevils enter the diapause stage in preparing for hibernation. They become sluggish, cease breeding, and store up enough fat to carry them through the winter. Insecticides applied in the fall can destroy the weevils before they are in complete diapause and ready to hibernate. Precise timing is essential in this method of control or eradication.

Use of insecticides before the cotton crop is made protects the current crop but generally leaves enough weevils to enter diapause and subsequently survive the winter in sufficient numbers to constitute the usual threat to cotton production the next spring. After diapause, the insects move to woods trash for winter protection and disperse over too wide and inaccessible an area for effective treatment in their hibernating quarters.

The insecticide methyl parathion will be applied this fall, two to four times at about 10-day intervals before frost, on some 1,200 acres of cotton in Texas, 250 acres in Louisiana, 25 acres each in South Carolina and Mississippi, and possibly 10 or 15 acres in Arkansas. Checks will be made after treatment this fall and again next spring, in cotton fields and adjacent woods trash, to see how many weevils survive.

New Traffic Manager

MINNEAPOLIS, MINN. — Donald C. McGorman has been appointed traffic representative for Northwest Nitro-Chemicals, Ltd., with offices in Minneapolis.

Mr. McGorman, a former assistant general freight agent-rates of the Minneapolis and St. Louis Railway, is a graduate of the Roosevelt High School, the College of Advanced Traffic, Chicago, Ill., the Minnesota School of Business and the Rail Management & Transportation course of Washington University.

African Disease Carrier Found in Florida

WASHINGTON—The red tick carrier of several exotic animal diseases —including East Coast fever—has been found in Florida, the U. S. Department of Agriculture reported.

This is the first time that this tick, common to Africa and a known carrier of Texas cattle fever, has been identified in North America.

Officials in charge of state-federal livestock disease eradication programs in Florida said the ticks were found by an inspector checking animals in the 160-acre animal compound of "Africa, U.S.A." at Boca Raton.

Discovery of these African ticks in the U.S. poses a new problem in tick eradication because of the tick's ability to survive on the ground more than a year. This is a two-host parasite and can be carried by a second host animal after it has dropped from the first.

Fertilizer Mixing Plant Construction Announced in Iowa

CONRAD, IOWA — Alexander Enterprises has started construction of a $20,000 remote-controlled dry fertilizer mixing plant on the William Alexander farm east of here.

The company says with the addition of special metering equipment, one man will be able to prepare any analysis of fertilizer ordered by a farmer and in any quantity desired.

The plant will have a capacity of approximately 20 tons of mixed fertilizer an hour. The plant also contains equipment for putting fertilizer in 50 lb. bags.

New IMC Building

TIFTON, GA.—International Minerals and Chemical Corp. is constructing a new concrete-brick office building at its fertilizer manufacturing plant on Ferry Lake Road at Tifton. The building, which will contain about 1,200 sq. ft. of floor space, will include two private offices, a bookkeeping area and a storeroom for supplies.

BEETLE DANGER LESSENS

SACRAMENTO — California agriculture probably has escaped introduction of the Japanese beetle for another year. William E. Warne, state director of agriculture, said no more of the destructive pests are being taken from planes arriving from eastern points where the beetles abound, and it is reasonable to believe the immediate danger of infestation has passed.

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Ansell I. Raney Named Chairman Of Safety Council's Fertilizer Section

CHICAGO—Ansell I. Raney, safety director for Phillips Chemical Co., Bartlesville, Okla., was named chairman of the Fertilizer Section of the National Safety Council at the group's meeting Oct. 17-18 in the Morrison Hotel here. Mr. Raney succeeds Elmer C. Perrine, technical representative for the Nitrogen Division of Allied Chemical Corp.

Other officers include Gaither Newnam, manager, insurance department, Smith-Douglass Co., Inc., vice chairman and John S. Mark, manager of fertilizer manufacturing, Farm Bureau Cooperative Assn., Inc., Columbus, Ohio, secretary.

A highlight of the meeting was a series of discussions on "Disabling Injuries," led by Mr. Perrine.

Mike C. Ellison, protection supervisor, Mississippi Chemical Corp., Yazoo City, Miss., started the discussions with comments on lost time injuries.

"From 3% to 5% of those workers who were off the job for one day could probably go back immediately if we could enlist the cooperation of the worker and count on his being in our corner," Mr. Ellison said.

E. J. Edmond, director, automotive safety, Armour & Co., Chicago, stressed the importance of off the job accidents. He said workers should be educated not to stop at the scene of an accident unless their services are absolutely necessary. Other accidents often happen in this way, he said.

An increased frequency of accidents during contract negotiation periods and during the "turn around" periods, was pointed out by R. L. Freeman, supervisor, safety and services department, Butler Chemical Co., Galena Park, Texas. "This frequency rate could be lowered by alerting supervisors and talking things over with employees before and during such a period," Mr. Freeman said.

Norman F. Maddux, plant manager for Florida Nitrogen Co., Tampa, advised strongly that safety devices and safety programs be installed before a new factory or installation goes into operation.

Another feature of the program was a discussion on "Mouth to Mouth Resuscitation," by Harry A. Veditz, safety engineer, Maryland Chemical Corp., Baltimore. Mr. Veditz covered the latest techniques in this method of reviving overcome individuals.

Luncheon speaker on Oct. 18, was Dr. J. R. Naden, chief medical officer, British Columbia Workmen's Compensation Board, Vancouver, B.C. Dr. Naden indicated that present safety programs are not good enough, and that more effective steps should be taken to aid the recovery and rehabilitation of accident victims. He said management could get more workers back on the job and into active circulation with a good program.

Dr. G. G. Alexander, industrial medicine, Pasadena, Texas, talked on "Small Plant Medical Programs." Dr. Alexander listed four tests of a good medical program as:

1. It should have No. 1 support and endorsement of management.

2. Workers should have the realization that the doctors perform a needed service. He made the point that a worker that has to see an industrial doctor really has to see him, rather than his own doctor, and so greater realization should be encouraged of the fact that the doctor in the plant really does an important and necessary job.

3. It should have in-plant medical care, which involves the service of a nurse or interested supervisor.

4. There should be a conviction that the medical service is 100% for the benefit of the employees.

In a special presentation, Paul T. Truitt, president of the National Plant Food Institute, was presented with a letter of commendation by the National Safety Council on behalf of the members of the council's fertilizer section. The letter, signed by Howard Pyle, the council's president, cited Mr. Truitt for his contributions and constant emphasis on the need for accident prevention, and hailed him for his initial efforts in forming the fertilizer section. The letter pointed out that Mr. Truitt's work was "instrumental in awakening the industry in achieving a progressive safety program."

In other business, Louis H. Wilson, NPFI secretary and public relations director, was named liaison officer between NPFI and the fertilizer section. Mr. Truitt formerly held the position.

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Cattle still surviving were washed off by Greenville firemen who took two pumpers to the ranch. Also two veterinarians gave the cattle injections in an attempt to counteract the poison. These specialists said the cattle got the chemical into their systems by licking their bodies after being sprayed.

Monsanto Reports

ST. LOUIS — Monsanto Chemical Co.'s combined sales for the first nine months of 1960 amounted to $636,564,000, compared to $613,188,000 for the same period in 1959, the company reports. Such sales include those of the parent company, its domestic and foreign subsidiaries and one-half of the sales of 50%-owned associated companies.

Net income from such sales was $46,475,000, 7.8% less than income of $50,412,000 in 1959's first nine months.

NO NO NO! . . .

Avoid Connecting Ammonia and Sulfuric Acid Lines in Plant

By Emerson Jones
Nitrogen Division
Allied Chemical Corporation

CHANGING TECHNIQUES in the fertilizer manufacturing industry have brought about an increased use of sulphuric acid in the mixing process. While this has been helpful in production of plant food materials, it is not without certain hazards if basic common-sense rules are not followed carefully.

Following are instances where unsafe practices have been followed. Occasionally, because of the convenience associated with the use of sulfuric acid, equipment will be installed with the sulfuric acid and nitrogen solutions systems connected.

Such an arrangement can be extremely unsafe. The author has known of cases where this was done.

Particularly in a continuous system, in an effort to minimize the number of pipes in the ammoniator, someone may come up with the idea of connecting the solution and acid lines before they enter the ammoniator. Most operators realize of course what they may be getting into by such a move and discard the idea before such an installation is made.

However, in batch equipment the hazards of connecting the two systems may not be so apparent and systems have been installed where such a connection is made without realizing its danger.

In the batch system, after running separate pipe lines from storage tanks to the batching tanks and then separate pipes into the mixer, it is often thought that some cost may be saved by connecting the vent lines. This is where the trouble begins, but it may not become apparent during normal operations.

But if a gage glass were to plug, a valve leak, or for some other reason either tank was filled completely fu'l with the vent valve open, the material could flow through the vent line and back down into the other tank. Under these circumstances, the operator would not know that this was happening.

In one plant where th's happened recently, the operator noticed a temperature build-up in the solution tank and, suspecting some difficulty, immediately discharged it into the mixer thus avoiding any complications.

This is a particularly serious matter if sulphuric acid lines and anhydrous ammonia lines get connected and acid leaks back into the anhydrous ammonia storage tank. As most production men are aware, this has happened and the resulting explosion has caused loss of life.

When laying out systems such as these where a potential hazard may exist, it is wise to follow the advice of the old carpenter: "Measure twice and saw once." Only in this case, "think twice and install once."

Batch tanks themselves with their exposed gage glasses are a source of potential danger. This is particularly true when using this type measuring equipment with high pressure solutions. Protect those gage glasses. There are several ways of doing it. Some plants have used old automobile windshields, which of course are safety glass, to hang in front of the gage glasses to direct any flow in case of a break away from the operator. Another simple way of doing this is to encase the gage glass in a supported piece of loose, oversized lucite pipe. Better still, before installing new batch tanks it may be well to consider seriously the use of meters. Such devices, entirely suitable for batch type operations, are available today at relatively low cost.

While speaking of relief valves, meters, and other such devices, it is appropriate to touch on an important area of potential hazard in the handling of anhydrous ammonia that is being overlooked in a number of plants. This is the lack of pressure relief valves in the anhydrous ammonia pipe lines. At any place in an anhydrous ammonia system where there is the possibility of trapping liquid ammonia between two closed valves, a pressure relief valve must be installed.

The coefficient of expansion of liquid ammonia is high, and with liquid trapped between two closed valves it does not take too much heat to create a king-sized bomb. Install relief valves in these lines! . . . And be sure if they should open, the flow would be directed away from any personnel in the area.

In our own plants we use extensions on the discharge side of the relief valve so that the extension will carry the ammonia at least 6 feet above any platform within 100 feet. This should be kept in mind when installing any safety equipment. It is conceivable that a man could be injured by safety equipment.

Finally, emergency showers must be in the operating areas. This is extremely important. Arrangements must be made so that this equipment can be useable throughout the year and it is not necessary to turn it off during freezing weather. Men working in close proximity to nitrogen solutions, anhydrous ammonia and acids have the right to expect emergency aid near at hand if the need arises. It should be provided.

Nearly all of the liquid materials being used in fertilizer manufacturing operations can be hazardous materials. Manufacturers should look over plant layouts and make modifications to minimize or avoid these hazards, install safety equipment, and instruct operators how to properly handle these materials. They should also have the necessary protective equipment, and be made to use it. Assume

(Turn to **SULFURIC**, page 40)

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To obtain more information about items mentioned in this department simply: (1) Clip out the entire coupon in the lower corner of this page. (2) Circle the numbers of the items of which you want more information. Fill in the name and address portions. (3) Fold the coupon double with the return address portion on the outside and fasten the edges with a staple, cellophane tape or glue. (4) Drop in the mail box.

No. 9235—Steel Building Booklet

A new booklet entitled "7 Money Saving Ideas from Stran-Steel," offering suggestions to those planning to build, is available from Stran-Steel

Corp. The booklet discusses items that should be considered before the plans are drawn. Some of the points could easily be overlooked, the company says, and result in a building of higher cost, lower efficiency and lower resale value. "What is the importance of color in a building's design?" "How can lower construction costs be achieved?" "What about fire safety, ventilation, financing?" These are some of the questions answered in the booklet. For copies, check No. 9235 on the coupon and mail.

No. 9252—Services Brochure

A 12-page brochure, bulletin No. 8010, describes engineer services in the development of complete plants available from Dorr-Oliver, Inc. Services covered in the bulletin include laboratory testing, pilot plant demonstration, flowsheet preparation and engineering studies, cost estimates, plant design and specifications, purchase of equipment, supply of complete plants, erection and construction, supervision of initial operation and training of plant personnel. For copies, check No. 9252 on the coupon and mail.

No. 9254—P-Tertiary Butylphenol

The Industrial Chemicals Division of Stepan Chemical Co. is offering p-tertiary butylphenol as free-flowing flakes in 50 lb., glass-lined kraft bags. According to the company the flakes are white and over 98% pure, containing less than 1.5% ditertiary butylphenol. The product is soluble at 25° C. in most oxygenated and chlorinated solvents, moderately soluble in aliphatics, not soluble in water but soluble in alkaline solutions. The product can be used as an intermediate in making insecticides. For details, check No. 9254 on the coupon and mail.

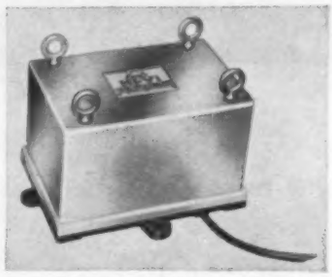
No. 9255—Batch Mixing Muller

Frederic B. Stevens, Inc., has announced a new Stevens muller. The muller is designed for batch mixing

of a wide variety of dry and semi-dry products including fertilizers. It has a rated capacity of up to 400 lb. Features listed by the company include: Low silhouette, standing 4 ft. high; compactness, occupying 7 sq. ft. floor space; speed, mixing a 400 lb. load in less than a minute; solid construction, and little or no maintenance. For more information, check No. 9255 on the coupon and mail.

No. 9231—Bin Vibrator

Eriez Manufacturing Co. has added the model 60U bin vibrator, the largest model yet, to its line. The model is an "in line action" type for installation on bin walls of approximately ⅝ in. thickness and of 20 ton capacity. The concentrated vibratory action is more independent of objects to which it is attached, and is more stable in operation over a wide range of service conditions, the company



says. It is a double-impact type of vibrator, impacting at both top and bottom of the stroke. It is a cushioned impact, making it a "semi-noiseless" unit in which the hammer delivers 7,200 impacts per minute at 60 cps. Four mounting lugs are located at the sides and end of the cast iron base. Details can be secured by checking No. 9231 on the coupon and mailing.

No. 9251—Fork Truck Bulletin

A bulletin describing and illustrating the "Utilitruc 7024" has been published by Clark Equipment Co. The battery-powered fork truck has a 7,000 lb. capacity. The bulletin contains dimensional and engineering specifications. It is illustrated with scale drawings and a full page photograph which points out design features. A capacity chart and table of upright dimensions are included along with information on power supply, speeds and grades, drive motor, drive control, brakes and hydraulic system. For copies, check No. 9251 on the coupon and mail.

No. 9273—Phosphate Bulletin

An article describing the installation of flotation and reactor plants at a California company is offered in a six-page bulletin by Dorr-Oliver, Inc. The article describes the production of high quality phosphate from low grade carbonaceous ore through flotation and through calcining in "FluoSolids" reactors. Complete details of the process are given, as well as a flow sheet of the flotation and the reactor plants. For copies, check No. 9273 on the coupon and mail.

No. 9270—Heavy-Duty Tanks

A line of vertical or horizontal heavy-duty glass reinforced polyester tanks for storing and processing corrosive liquids in general and agricultural chemical and other processes has been announced by Justin Enterprises, Inc. The tanks are available in a number of capacities ranging from 20 gal. to 20,000 gal. The tanks are recommended for use in replacing stainless steel or lined tanks in many applications where an increase in service life, decreased initial cost, or both are desired, the company says.

The tanks have been fabricated from a specialty bisphenol-A polyester resin reinforced with glass fibers. For more information, check No. 9270 on the coupon and mail.

No. 9269—Polyester Film

A method of joining polyester sheet, film and tape which requires no joint preparation, external heat or adhesives, has been developed by International Ultrasonics, Inc., Rahway, N.J. The ultrasonic method forms a joint as strong and permanent as the polyester material itself, and results in no increase in thickness at the joint, the company says. Coatings or emulsions need not be removed to make the joint. The process is applicable to packaging film and computer tape made of polyester materials. For more information, check No. 9269 on the coupon and mail.

No. 9275—Liquid Fertilizer Plant

The "Autoformulator," a one-man-operation, liquid fertilizer plant, has been introduced by Plant Food Equipment Co. The unit, the company says, automatically handles pre-weighed bulk soluble fertilizer ingredients direct to the "Low-Boy" weigh hopper. A "Side-winder" floor sweep screw and the cup elevators discharge the bulk ingredients to the hopper and then through a system of air operated gates to the reactor tanks. By the addition of over-track pan and sepa-

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☐ No. 9251—Fork Truck Bulletin	☐ No. 9271—Odorant Brochure
☐ No. 9252—Services Brochure	☐ No. 9272—Tank Cleaner
☐ No. 9254—P-Tertiary Butylphenol	☐ No. 9273—Phosphate Bulletin
☐ No. 9255—Batch Mixing Muller	☐ No. 9274—Conveying Testing
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rate screw feed to the floor sweep screw, the bulk ingredients from the hopper cars or mobile bulk handling trucks can be conveyed to the cup elevators and then to an overhead swivel bulk piling screw to storage and through a system of air operated gates the plant operates while the cars or trucks are being unloaded. It will handle and prepare up to 25 tons an hour of exactly proportioned soluble material, the company says. For details, check No. 9275 on the coupon and mail.

No. 9274—Conveying Testing

A research laboratory, designed for full-scale testing of air conveying systems, has been announced by Flo-Tronics, Inc. The laboratory will allow the company's engineers to evaluate materials handling problems with any type of material. The facility consists of an actual working system made up of the company's fluidizing units, rotary airlocks, a "puffless" bag dump, line diverters, scaling equipment and transistorized electronic process control panels. By combining several lines of ducts, installations up to 450 ft. long can be duplicated. Flow characteristics, material-to-air ratios, horsepower requirement and equipment performances can thus be obtained under operating conditions, the company says. For details on the service, check No. 9274 on the coupon and mail.

No. 9272—Tank Cleaner

A lightweight, heavy-duty tank cleaner has been announced by Sellers Injector Corp. It is water-powered, weighs 42 lb. and can be used with either two or four nozzles. Nozzles rotate in both the horizontal and vertical planes simultaneously, providing a thorough washing pattern inside any tank or vessel, the company says. The unit operates at pressures from 28 psi to 170 psi and at temperatures up to 203° F. Capacity range is 3,800 to 8,500 gal. an hour. It performs suspended from the end of the hose or on a special folding stand. Wearing parts are made from beryllium-bronze, stainless steel and teflon. Additional information can be secured by checking No. 9272 on the coupon and mailing.

No. 9268—Gauge Bulletin

Pressure gauges, thermometers and control instruments are described in a bulletin offered by U.S. Gauge, division of American Machine & Metals, Inc. Pressure gauges described are the bourdon-tube type. Photos illustrate each of the 10 types covered, with information on dimensions, accuracies, construction features and suggested uses included. Included under temperature measurement are dial and glass tube thermometers, panel type and multi-angle thermometers. Photos illustrate the different models, and information on construction, dimensions, ranges and typical applications are given. Control instruments included are indicating controllers, valve positioner and pilot options, recorders, chemical attachments and accessories. For details, check No. 9268 on the coupon and mail.

No. 9271—Odorant Brochure

A line of odorants especially designed to improve the odor of Malathion is covered in a brochure called "Malamasque," being offered by Dodge & Olcott, Inc. For copies of the brochure, and for more information about the product, check No. 9271 on the coupon and mail.

Rockland Chemical Plans To Double Facilities

VINELAND, N.J. — Rockland Chemical Co., West Caldwell, N.J., broke ground in October for new warehouse and operational facilities that will double the size of its plant here. The new facilities will be extended from the rear of the firm's current warehouse.

The large building will include a covered loading platform capable of accommodating four trailer trucks.

IMC Buys Indiana Fertilizer Company

CHICAGO—International Minerals & Chemical Corp. has contracted to purchase E. Rauh & Sons Fertilizer Co., Indianapolis, Ind., which operates three plants and sells in five Midwestern states.

The three Rauh plants, located at Indianapolis, Plymouth, Ind., and Sylvania, Ohio, will continue to operate as at present, said John Zigler, IMC vice president.

Rauh's "Signature" brand products will continue to be sold in the five-state area of Illinois, Indiana, Ohio, Michigan and Wisconsin, Mr. Zigler said. Production, sales and management personnel will be retained to operate the company.

The contract calls for the transfer of 119,600 shares of IMC common stock in exchange for all of Rauh's stock.

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Shipping Experts Solve Transportation Problems

CHICAGO — Tackling transportation problems in the plant food industry and helping shippers to save on such expenditures was the objective of a program recently completed by traffic experts of International Minerals and Chemical Corp. Assuming that transportation costs in the plant food industry need not be an insoluble problem, the experts paid personal visits to 239 fertilizer manufacturing firms in various parts of the U.S. and Canada to aid in solving transportation woes.

The eight traffic men on tour were open to requests for help and information on many phases of transportation including rates, warehousing, switch tracks, routing, freight damage, scheduling, barging, and other traffic headaches common to the fertilizer manufacturer.

Reports of problems attacked and solved run the entire gamut of such difficulties, according to reports from the eight men contacting fertilizer manufacturers. Some typical situations encountered included a New England firm which was seeking help in securing a vessel for shipment. By consolidating tonnages of supplier and purchaser, the vessel was secured and filled, with savings to all concerned.

Because of unfamiliarity with regulations covering demurrage charges by carriers, a midwest manufacturer had neglected to meet these obligations. The carrier was ready to turn the case over to the Interstate Commerce Commission, but an explanation to the manufacturer prevented this.

Another midwest customer decided to switch to truck shipment when he was unable to secure lower railroad rates. A meeting was arranged with a representative of a truck leasing firm, contract drawn up, following which the railroad rate was reduced, and the manufacturer was given his choice of two reasonably priced services.

By examining various tariffs, combination rates lower than the through rates were discovered for a southern customer. An overcharge claim was prepared as an example, and the customer secured refunds of approximately $2,400 on movements of sulphate of ammonia.

By acting as middlemen, the traffic experts were able to set up warehousing facilities for a large manufacturer, thus enabling him to gain sales which would otherwise have been lost during the peak season.

A device known as "key sack loading" was advised often by the traffic men. The device calls for interlocking of bags to prevent shifting in the rail cars and thus reducing damage. Bag shipment damage has also been cut by taping the bags loaded in the doorway.

Hopper cars, tank cars, barges, and other special equipment have been arranged in periods of tight supply in a particular section of the country. Broad acquaintance with carriers in all sections often uncovered a supply of rolling equipment available in another area, the men reported.

Transit arrangements offer another area of savings to the fertilizer manufacturer. A stop-in-transit for storage, bagging, pelletizing or other processing was arranged for a number of companies.

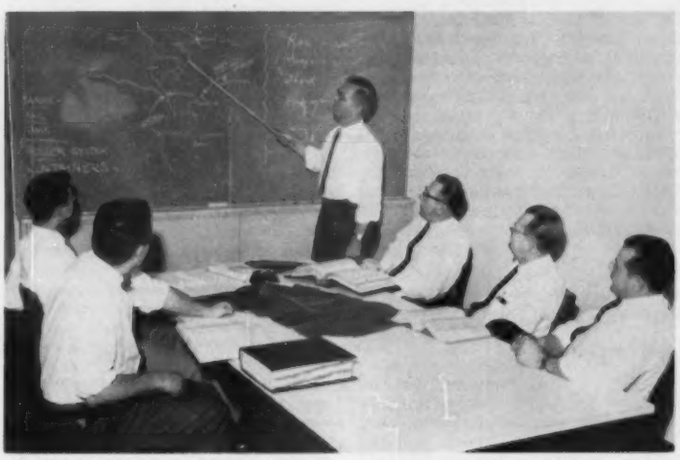
Similar to the foregoing is a "roller system," through which cars are sent to an intermediate point, then diverted to final destination when it becomes known. The advantage is a saving in transit time, because the shipment is much nearer to the sales territory when the order is received. One midwestern company gained significant new sales under this arrangement through its ability to offer customers immediate shipment during the short selling season.

Eugene Landis, director of transportation at IMC, points out that the field work was successful from many points of view. The most important has been the saving to the fertilizer manufacturer, he says, expressed either in more adequate profit or in ability to hold off price increases to customers.

Carriers also were gratified. It was found that many of the incorrect rates and practices were caused by local unfamiliarity with proper rules, or by the fact that the smaller fertilizer man had no staff to bring his case to the attention of the carrier.

Larger companies visited by the task force are reported also to welcome the offer of assistance, even though they already had a competent traffic group. Often company officials became more aware of the range of duties their own traffic men had been performing for years.

Requests for traffic counsel and other services continue to be received by Mr. Landis' group, and IMC has made traffic service a continuing program.



TRAFFIC PATTERN—Eugene Landis, director of transportation for International Minerals & Chemical Corp., reviews a traffic problem with some staff members in preparation for service tour to more than 200 IMC customer fertilizer companies. Left to right are Kenneth Hessler, William Conforti, Mr. Landis, Walter Knorst, assistant director, Ronald Ellwing, and Charles Scervino. Not shown are George McMaster and Dominic Persino, who also made the tour.

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Fivefold Increase in Fertilizer Output Called for to Feed World, Ease Tensions

ROME, ITALY—If world food production is to keep pace with the increase in population, the output of chemical fertilizers will need to be raised from its present level of about 23,000,000 tons to about 100,000,000 tons a year by the end of the century.

This was the view expressed in a recent statement by Dr. F. W. Parker, assistant director-general and head of the technical department of the Food and Agriculture Organization (FAO) in Rome.

"The core of the problem is to increase substantially the food production in the underdeveloped countries," Dr. Parker said. "At present, more than half of the world's population of 3,000 million live in countries where the critical battle to grow more food is being fought.

"This struggle is becoming more intense with the increase in population, which is likely to exceed 6,000 million by the end of the century—only 40 years from now," he continued. "With double the population, we must at least double food production. In fact, we ought to do better than that in the underdeveloped regions because the present food supplies are inadequate."

Dr. Parker said that a study of the levels of agricultural production during the last thousand years indicated that the yield in the past was generally low.

"However as the use of fertilizers increases to around 60 kgs. of plant food—nitrogen, phosphoric acid and potash — per hectare, the average yield of grain crops rises to 2,000 kgs. per hectare," he said. "In several countries where the average use of plant food in fertilizers amounts to 200 or more kgs. per hectare, there are instances of average yields reaching 3,000 or more kgs. per hectare."

Data clearly indicated that, with the introduction of fertilizers, other improved practices, including the use of better varieties of seed, of modern agricultural methods and pest control, were adopted at the same time.

As to increased use of fertilizers in the less developed countries, Dr. Parker mentioned the case of Greece and India among some examples. "The use of fertilizers in Greece before 1939 was about 10 kgs. of plant food per hectare and the grain yield about 700 kgs.," he said. "By 1957 Greek farmers were using about 35 kgs. per hectare and grain yields had increased to about 1,400 kgs. per hectare, an increase of almost 100%.

"India provides an example of a country where there is a great opportunity to increase substantially the use of fertilizers and where the government has in hand a program to encourage this," he continued. "The average yield of grain crops in India in 1957 was 780 kgs. per hectare which was obtained with an average use of only 1.4 kgs. of plant food per hectare. In view of our experience and the data now available, we can estimate that if an average yield of 1,200 kgs. of grain per hectare is to be obtained in India, the use of fertilizers along with an improvement in other crop management practices, should be increased to 10 kgs. of plant food per hectare, which would require 1,800,000 tons of fertilizers. If an average yield of 2,000 kgs. is required, then fertilizer consumption would have to average about 60 kgs. of plant food per hectare and total requirements would be approximately 10,000,000 tons." (India, Pakistan and Indonesia are building nitrogen fertilizer plants with a total capacity of 440,000 tons per year.)

Natural organics in SMIROW tankage will grow tobacco like this . . . with smooth, even texture . . . well-filled out leaves from top to bottom.

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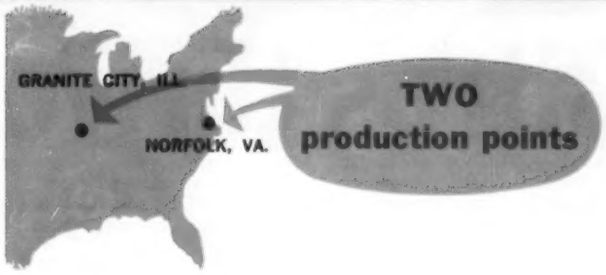
has these advantages:

- Eliminates fire hazard • 100% organic
- Faster service from two production points
- Continuous supply will reduce expensive inventory • Uniform in color and texture
- Prevents allergy-dust problems



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- Continuous supply will reduce expensive inventory • Uniform in color and texture
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Be sure your tankage requirements will be filled

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Each year, more and more fertilizer manufacturers use SMIROW natural organic nitrogen.

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FETED FOR SAFETY—Employees of the Witts Fertilizer Co. of Norwich, Ontario, were recently feted for having established a safety record of 1,610 calendar days without a lost-time accident. At a dinner in the Norwich Legion Hall employees were presented with individual awards for their efforts in observing safety practices for more than four years. Shown above at the presentation ceremonies are (left to right) Edward Pite; Margaret Butler; Sam Cree, manager; Mrs. Caroline Orth and James Rennie.

Phosphate Plant for Morocco Is Planned

SAFI, MOROCCO — Construction of two phosphatic fertilizer plants near Safi, Morocco, is being planned. An agreement has been signed between the Moroccan Government and Royal Dutch Shell for construction of a 110,000-ton ammonium phosphate installation.

Bureau d'Etudes et de Participations Industrielles has submitted specific plans to U.S. and European firms selected as qualified to construct a concentrated or triple superphosphate plant. A contract was expected to be awarded after final offers were made.

Eventual annual capacity will be 200,000 tons of triple superphosphate. Facilities to make sulfuric and phosphoric acids will be included.

The two phosphatic fertilizer plants will consume some of Morocco's output of phosphate rock, as well as beginning a chemical industry in that country. Morocco is a major producer of phosphate rock, primarily for export. In the first 6 months of 1960, output was 3.6 million metric tons, a 16% increase over first half 1959 production. The proposed processing of phosphate rock into fertilizers will be for both domestic consumption and export.

Southern Weed Conference Plans Announced

MEMPHIS, TENN.—The latest developments in the use of herbicides to control weeds in all phases of southern agriculture will be presented and reviewed during the 14th Annual Southern Weed Conference scheduled to be held at the Hotel Soreno in St. Petersburg, Fla., Jan. 18-20.

Dr. R. A. Darrow of the Texas Agricultural Experiment Station, College Station, Texas, conference president, announced that plans are under way to make this meeting the "most outstanding of all the conferences held to date."

The Conference Program Committee under Dr. Ellis Hauser, ARS-USDA, located at the Georgia Agricultural Experiment Station, Experiment, Ga., is now preparing the program. The complete agenda of the conference will be announced prior to the meeting.

California Pesticide Review Scheduled for February

SAN LUIS OBISPO, CAL.—Western Agricultural Chemicals Assn. and the agriculture department of California State Polytechnic College at San Luis Obispo will co-sponsor a "Pesticides Review for the Coastal Counties" Feb. 15, 1961, on the campus of that college.

William Troutner, head, crops department, of Cal Poly will be chairman. The speakers will be scientists from Riverside, Davis and Berkeley campuses of the University of California, plus R. Z. Rollins, chief, Bureau of Chemistry, California State Department of Agriculture.

All major crops grown in Ventura, Santa Barbara, San Luis Obispo, Monterey, Santa Cruz, San Benito and Santa Clara counties will be covered.

TO DEDICATE BUILDING

BERKELEY, CAL. — The California Farm Bureau Federation will dedicate its new $2,000,000 headquarters building at its 42nd annual convention Nov. 13-17.

Open House Held at Bunker Hill's New Phosphoric Acid Plant

KELLOGG, IDAHO—Several hundred persons attended the recent open house at the new two million dollar phosphoric acid plant of the Bunker Hill Co. here.

Company officials, including the newly-elected president, Charles E. Schwab, were on hand to greet visitors. Mr. Schwab said that the new chemical plant is another example of diversifying Bunker Hill's economic base. He explained that the acid production itself involves a leaching process, using phosphate rock and sulfuric acid as the basic ingredients. The rock will come from pits at Montpelier, Idaho and the acid will be piped from the company's sulfuric plant. Phosphate rock will be shipped in by rail.

A pneumatic system will blow the rock from storage to the process building, in which the actual production of phosphoric acid will take place. The process building is 70 by 72 ft. and 70 ft. high.

The phosphoric acid emerges in dilute form and is then concentrated in an evaporator to 74% concentration for various consumers.

After being processed to the required concentration, the phosphoric acid will be stored in three 150,000 gallon storage tanks to the north of the process building. The new plant will have an initial capacity of 130 tons per day.

NINE MONTH REPORT

WILMINGTON, DEL. — Hercules Powder Co. reported for the nine months ended Sept. 30, 1960, net income equal to $2.36 a share of common stock. Earnings in the first nine months of 1959 were equal to $2.07 a share of common stock. For the third quarter of 1960, earnings were equal to 85¢ a share of common stock. This compares with earnings in the third quarter of 1959 equal to 71¢ a share.

Fertilizer Tonnages Reported

North Carolina

RALEIGH, N.C. — Figures compiled by John L. Reitzel, assistant agriculture commissioner, for the fiscal year ended June 30, 1960, revealed a drop in consumption of fertilizer and fertilizer materials in North Carolina.

A department spokesman said the drop of more than 6% shown in total listings of manufacturers' shipments of mixed fertilizer and fertilizer materials to each county in North Carolina was felt in all but 17 of the 100 counties. The decreases ranged all the way from a drop of 25% in Dare, where total consumption is small, to a drop of 3% in Robeson, the biggest user of fertilizers in the state.

Even though the total of 1,535,739 tons of fertilizer and fertilizer materials sold in the state for 1959-60 was down from the previous year's usage, consumption remained 10% higher than in 1957-58.

For the fourth consecutive year the general-crop grade, 5-10-10, proved to be the most popular in North Carolina, accounting for more than one-third of the total sales of mixed fertilizers.

●

South Carolina

CLEMSON, S.C. — Fertilizer sales in South Carolina during September of this year amounted to 21,039 tons, reported B. D. Cloaninger, director, fertilizer inspection and analysis department, school of agriculture, Clemson College.

The total represents a slight drop from the 22,994 tons sold during the same month in 1959.

●

Oklahoma

STILLWATER, OKLA.—Fertilizer sales in Oklahoma during August, 1960, amounted to 16,653 tons, substantially above the 9,853 tons reported for the same month last year.

Most popular grade was 10-20-10, with 2,633 tons sold. Most popular material was ammonium phosphate 16-20-0 with 2,548 tons sold.

Early man was aware of the progressive inaccuracies of his pivot balance scales . . . but none knew how to remedy the situation.

The problem was solved in 1956 when the United States issued a patent for a "Thayer Flexure Plate" Leverage System. A team of engineers and businessmen aware of industrys tremendous cumulative loss of materials in weighing operations, had devised a revolutionary new scale.

Knife-edge pivots that progressively wear and change were replaced by Thayer Flexure Plates that move only .001", yet accurately reflect the minutest changes in weight. This *firmly joined* lever withstands shocks and vibrations indefinitely. Dirt and dust are no longer a problem. Thayer guarantees this leverage system accurate for the life of the scale.

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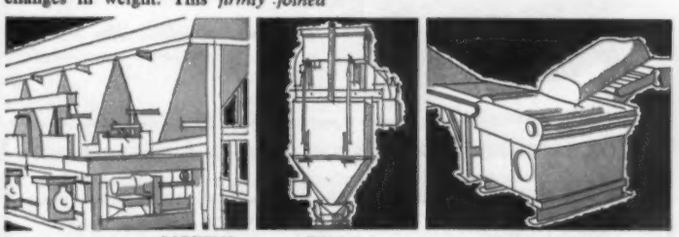
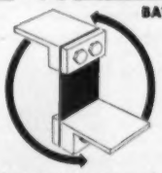
Working in conjunction with straight electrical controls, it forms the most reliable, low maintenance system ever devised to control processing or materials handling *by weight*. Literature on its application to filling, batching and checkweighing operations is available on request.





THAYER SCALE

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THAYER SCALE CORP. THAYER PARK PEMBROKE, MASS.

A Subsidiary of SUNDSTRAND CORPORATION

Careful Maintenance Program Needed to Offset Work of Plant Dust, Corrosion

MACHINES NEED CARE — Front-end loaders such as the one pictured above (at National Fertilizer Co. of So. Sioux City, Neb.) need a sensible maintenance program to keep them rolling economically. Dust and corrosion present in fertilizer plants complicate maintenance problems, making proper maintenance more necessary than would be the case in many other applications.

WITH the rubber-tired front-end loader practically a standard piece of equipment in fertilizer plants in all sections of the U.S., these machines represent a major investment on the part of manufacturers.

Dust-filled conditions in most fertilizer plants are not conducive to long life of any mechanical vehicle, even though the manufacturers of front-end loaders have taken great pains to build into their products safeguards to reduce damage from dust and corrosion.

Thus, proper maintenance and common sense treatment of the mechanical servants loom as a must if full dividends are to be realized from the investment made in them.

What are some of the most often neglected areas of maintenance of these front-end loaders? Is it possible for the fertilizer plant management to reduce the number of replacement parts, or to expand the time between overhauls and other major repair operations? Significant savings could be realized if this can be done.

All machines on the market have many features in common, requiring the same type of care and maintenance, as well as presenting similar hazards for the careless operator. Engineers of the Frank G. Hough Co., manufacturer of the "Payloader" front-end shovel, have developed a list of "do's" and "don'ts" concerning the operation not only of their own brand of machine, but of all similar types of equipment. Here are some tips suggested for getting the most out of front-end loaders in fertilizer plants:

Blow Off Dust

A main cause of failure on loader units operating in fertilizer plants is the accumulation of corrosive and abrasive compounds around pivot points on the loader mechanism. To minimize this, the operator should "blow off" the unit with compressed air whenever possible. An air hose can usually be located in close proximity to the fueling pump and while fueling the unit the operator can blow off the unit.

Seal Off Electrical Parts

The fine fertilizer dust can play havoc with a loader unit's electrical system: the distributor, coil and regulator in particular. A good preventive maintenance trick is to seal these units with rubber boots. Strips cut from a rubber inner tube will work well.

Watch the Brakes

When the loader brakes are changed or repaired, the parts manager should check to see if the manufacturer has available "sealed brake" kits. Some manufacturers include these sealed brakes as standard equipment.

The elimination of fine fertilizer dust, which acts as an abrasive on the component brake parts, is of prime importance to long useful brake life.

Keep Reservoirs Clean

Whenever opening the hydraulic oil reservoir, care should be taken to clear the inspection cover opening of all foreign material. The harm done by minute particles of abrasive and corrosive material, such as fertilizer, can run into many dollars of repair.

Battery Care

Most loader units are shipped with the battery cables disconnected. When connecting the cables, a few minutes spent in cleaning and coating the terminal posts with a mineral grease will pay dividends in prolonged battery life. The polarity should be checked by turning the ignition on and cranking the engine. The amp meter should show a slight discharge.

Avoid Wheel Wobble

When reinstalling the drive wheels, care should be taken to line up the holding lugs with their seats. Failure to do so will result in a "wobbling" action which results in premature axle and/or hub failure.

Clutch Bearings

On loader units utilizing a manual clutch, care should be taken to properly lubricate the clutch throw out bearing. Far too often a light weight lubricant is used, which under sustained operating becomes a flowing liquid that coats the clutch plate facing. The result is a slipping or burned-out clutch.

Pivot Point Tips

Proper maintenance of loader mechanism pivot points is a key to long economic loader life. The most frequent cause of loader "down time" is due to bushing replacement. Never over-lubricate the loader mechanism pivot points! This acts as a trap which holds the fine abrasive fertilizer dust. A good procedure to follow when lubricating is to let a minute amount of grease "squeeze" out between the bushing and pin. This tends

HOLD IT, BOY—Day-dreaming while driving or servicing equipment is bound to make trouble. Cases have been known where careless operators have put radiator water in gas tanks and hydraulic fluid in radiators thinking it antifreeze. Keeping on the ball at all times is a must to prevent costly errors in maintaining motorized equipment.

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to carry away any foreign material, which has worked its way in. Then completely wipe off the excess grease. Long pin and bushing life is the result of this method.

Don't Let Rubber Rub

A good operator will always check the loader's rubber hydraulic lines for wear due to rubbing. Although a good loader will have steel tubing wherever possible, some hose is a must. If rubbing is detected, a quick remedy is to loosen the swivel covering end of the hose and reposition it, allowing for clearance.

In addition to observing maintenance procedures, safety precautions with front end loaders must also be observed. Here are some commonsense suggestions on how to operate these machines safely, and other cautions on how NOT to handle them:

1. Never get on or off loader unit while it is in motion or working.

2. Nevet get on or off loader unit without first lowering the loader mechanism to ground.

3. Never operate boom or bucket levers if engine is shut off and the loader mechanism is raised.

4. Do not work loader unit at full capacity the first 15 minutes of operation.

5. Always perform a visual and an operational check of the loader unit before putting it to work.

6. Never transport loads with the bucket raised more than 4 ft. off the ground. When traveling any distance over rough ground, carry the bucket near the ground.

7. Never stand under any part of the loader mechanism unless it is properly blocked.

8. Before starting engine, be sure that all controls are in neutral.

9. Operate the transmission in low when traveling down steep grades so that control of loader is maintained.

10. Always apply parking brake when loader is not in operation.

Further safety tips, beyond the above, have been issued by the National Safety Council. They warn the operator that only he, as an authorized driver, is ever allowed to operate a power truck. Thus the operator is responsible for seeing that no one else uses his vehicle. One way to make sure no one will take an unauthorized ride, is to remove the ignition key from its lock whenever the machine is left standing, even if only for a minute or two.

A machine of this type can do its best work, safely, only if it is in top condition. A daily inspection of key parts—steering gear, lifting controls, brakes, horns, lights, signal equipment, coupling and tires—can go a long way in eliminating causes of accidents.

From a safety standpoint, here are the three most important points:

1. Look out for pedestrians and other vehicles.

2. Observe company driving regulations at all times.

3. Make sure the vehicle is in good mechanical condition.

Monsanto Announces Acquisition Negotiations

NEW YORK—Monsanto Chemical Co. of St. Louis and American Viscose Corp. of Philadelphia announced that negotiations are in progress for the acquisition by Monsanto of Viscose's entire interest in the Chemstrand Corp., namely, Viscose's 50% interest in both Chemstrand's stock and Chemstrand's subordinated notes which are estimated will amount to $9,500,000 at the time the plan would be consummated.

Under the proposed plan, Viscose would receive 3,540,000 shares of Monsanto common stock which would be subject to special voting provisions so long as they are held by Viscose. However, Viscose has no present intention of distributing or disposing of the Monsanto shares.

Washington Liquid Group Plans December Meeting

SPOKANE, WASH — Washington Liquid Fertilizer Dealers Assn. will hold its annual meeting at the Davenport Hotel here Dec. 5, according to Dean Dinnison, N-Land Industries, Inc., Greenacres, secretary.

Mr. Dinnison said the relatively new organization (it was founded in January, 1959) will announce its agenda for the meeting at a later date, but that it would follow the aims of the organization which are to promote those things beneficial to the industry, discuss mutual problems of safety in the handling of problem liquids and work with the state legislature on matters of concern to the industry, such as highway restrictions.

Officers of the association for the current year are C. L. Cummings, Huntington-Cummings Co., Walla Walla, president; Sherman McGregor, McGregor Farm Chemicals, Hooper, vice president; Lyle W. Neff, Agriform Company of Washington, Pasco, treasurer, and Mr. Dinnison.

Group Sees No Need For More State Pesticide Laws in New Mexico

LAS CRUCES, N.M.—New Mexico farmers and ranchers are generally doing "a good job" of applying pesticide chemicals to their crops and livestock in the correct manner.

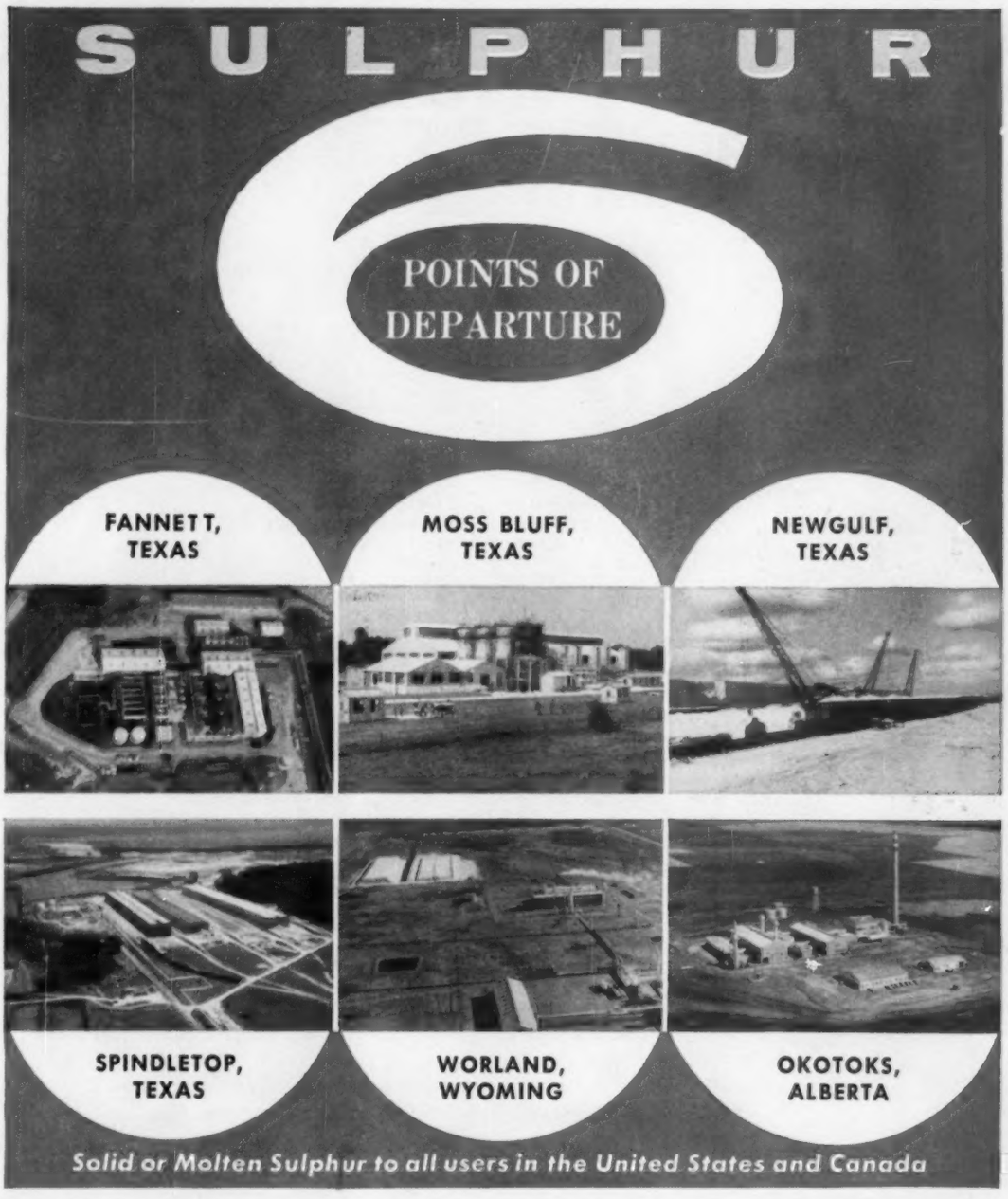
This was the conclusion reached at a special meeting of representatives of the New Mexico Farm and Livestock Bureau, the State Health Department and agricultural agencies.

"So far, we have not had a single case arise in New Mexico concerning incorrect use of agricultural chemicals on food crops," said the conference's final statement. "We see no need for further state legislation at this time."

WACA Northwest Meeting To Be Held in Portland

PORTLAND, ORE. — The Eighth Annual WACA Northwest Conference (formerly known as the Northwest Agricultural Chemicals Industry Conference) will be held in the Benson Hotel, Portland, Jan. 18-19, 1961, in conjunction, as usual, with the meetings of the two groups of scientists known as the Northwest Vegetable Insect Conference and the Western Cooperative Project.

Frank B. Stewart, general manager of Miller Products Co., Portland, recently elected second vice president of Western Agricultural Chemicals Assn., will be the director of the WACA Conference. Lin E. Harris, of Grange Cooperative Wholesale, Spokane, Wash., will be the program chairman. All three of the customary open meetings of the three groups will be held in 1961 in the Benson Hotel.



In addition to these six producing properties, stocking and distribution centers are being set up, thus broadening the TGS Service to industry. Ample supplies of both molten and solid sulphur will be available at these centers. Cincinnati, the first of these units, is now in full operation.

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OVER THE YEARS . . .

Package Industry Develops Better Bags for Fertilizers

By John H. Dively
Assistant General Manager
Packaging Services
St. Regis Paper Co.
New York

FERTILIZER PACKAGES and the machines, scales and other equipment used to fill them have been developing by leaps and bounds in recent years. In this period, the growth of the fertilizer industry has been outstanding. This growth has set a rapid pace for the packaging industry and an exciting challenge which, I believe, the suppliers of packaging materials and equipment have met conscientiously and well.

Both the packaging and fertilizer industries have moved ahead in the past because of the cooperation they have shown one another. This cooperation has worked to the mutual advantage of each. Proof of this lies in the extent of the research and development services that the packaging industry has devoted over the years to devising new and better packages for fertilizer. Of course, these improved packages would not have been possible if the people who produce and use fertilizer were not always willing to work with new developments, and to test them in the field, because this latter is of course the true test of a new package.

The writer does not intend to tell the fertilizer man his business. He has worked with the men in the fertilizer field long enough to know that he couldn't get away with it anyway! But with the fertilizer industry Round Table soon to come up again, I would like to review briefly some of the major developments in fertilizing packaging over the years, including the part played by our own and other companies in some of these developments.

Current developments that come to mind in this respect include new valve bag packers and open mouth bag packing equipment for fertilizer. On the market now are new type machines: three- or four-tube valve packers offering high production through a one-man packaging operation, and equally efficient equipment developed specifically for open mouth fertilizer packaging.

Packaging in the fertilizer industry has not always been so efficient and streamlined. The new developments mentioned above should be viewed in perspective to gain a real appreciation for conditions of today as contrasted to those of yesterday. Great strides have been made in fertilizer packaging in general, bringing us up to the present high level of speed, economy and efficiency available to all plants today.

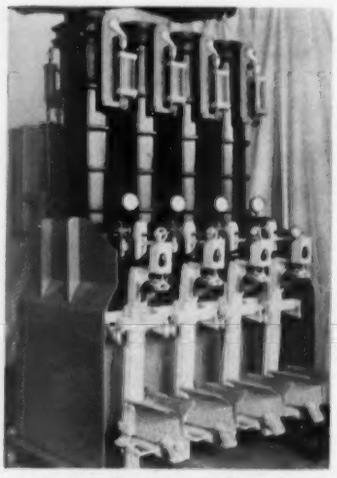
Just recently the author was chatting with Walter Wright, specialist on fertilizer packaging who has been with our company since 1932 and who was well known to fertilizer people long before that. We were discussing fertilizer packaging in general, and in looking at the modern materials and equipment that are available to the fertilizer industry today, we were both struck by what a far cry they are from those used in the early part of this century.

Long before most people can remember, fertilizer was packaged in barrels and these barrels were delivered to the farmer by horse and wagon. Most fertilizer plants then had an adjacent "cooperage" plant where the fertilizer producer actually made his own barrels!

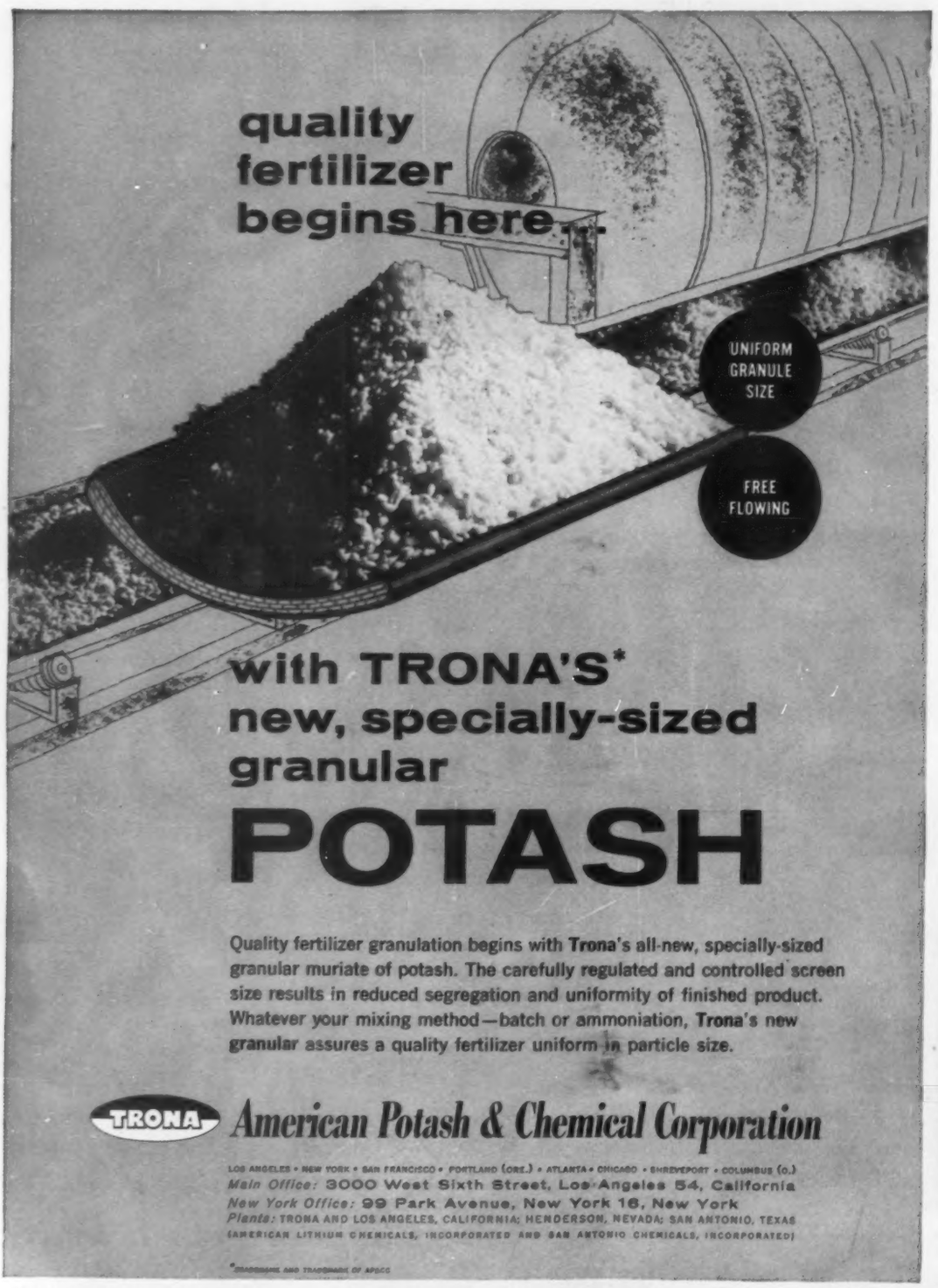
Next time you have a barrel handy, lift it! Examine it and figure out how much it cost to make. Think also of the storage, filling and shipping problems it would pose under present packaging operations. This would be a good time to pick up a multiwall bag between your fingers. Compare what it cost and how it is stored, filled and shipped. This is one of the most striking ways to show how far we have come in the packaging of fertilizer.

The barrel chapter in fertilizer packaging is ancient history now, but some barrels were still being used as late as 1930.

Of course, long before 1930, most fertilizer manufacturers had switched to burlap and cotton bags. These were packed in 200, 167, 125 and 100-lb. sizes. Though an improvement over the barrel, they still posed many problems. Moisture got into the product easily and made some fertilizers



VALVE-BAG FILLER—One of the newest types of valve-bag filling devices; a three-or-four tube machine offering high daily and weekly tonnage production through one-man operation.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PASTED-VALVE BAG FILLER—Pasted valve fertilizer bag being filled on a St. Regis packer at a midwestern fertilizer plant. The machine features automatic bag discharge and other design improvements over the original model introduced years ago. The original model, according to St. Regis, was the first packing machine designed exclusively for the fertilizer industry and many of these earlier devices are still in use in various parts of the country.

hard as rock. For some other plant foods the problem worked in reverse: gases and chemicals attacked the fabric from the inside and weakened it to the point where it was useless.

To overcome this, the fabric bags were later lined with waterproof paper. This was an expensive bag, but the best available before the development of much less expensive natural kraft bags with an asphalt laminated ply.

After several false starts, the fertilizer industry went to the 100-lb. all kraft sewn valve bag around 1934. Some companies had made the switch earlier, but 1934 was the year that marked the real changeover.

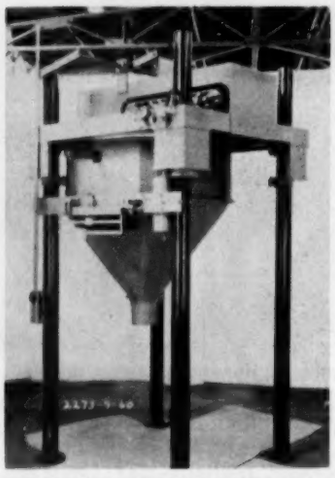
In 1932 our firm introduced to the fertilizer industry an all paper bag in conjunction with a packaging machine designed exclusively for the fertilizer industry. The bag was the 100-lb. sewn valve bag and the packer was the first automatic one-man operated valve bag packer for fertilizer.

This "granddaddy" of all fertilizer packers was the major valve bag packer used then, and there are many of them still in use today.

Between 1936 and 1938 a great deal of work was done by the industry to develop a new sheet that would keep fertilizer in usable condition and the package intact. The result, after many trials and errors, was the asphalt laminated sheet.

In 1950, the appearance of automatic open-mouth scales caused some

(Turn to **PACKAGING**, page 22)

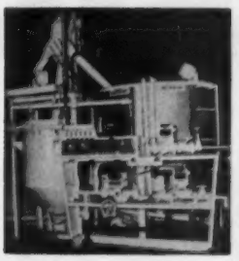


OPEN-MOUTH PACKER—Late model open-mouth type of bag filler for fertilizer plants, said by its makers to simplify and lower costs of serving operations in the plant.

Formula LIQUID FERTILIZERS of pharmaceutical accuracy produced by the solo operated

P. F. E. AUTOFORMULATOR

Extremely LOW COST PRODUCTION of LIQUID FERTILIZERS when you want it while the rush is on



Large blending capacity to 30 T.P.H. of bulk soluble fertilizer materials, depending upon the analysis

A completely automatic package-unit plant. Factory assembled and tested for economical installation. Complete information and sample installation diagram sent (without obligation).

While attending the National Fertilizer Solutions Association Meeting, Nov. 9, 10, 11, Memphis, Tenn. Visit with us (Room 352, Peabody Hotel) where things happen—and surprise announcement of our ELECTRIC-FORMULATOR.

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Want Ads ***For Best Results***

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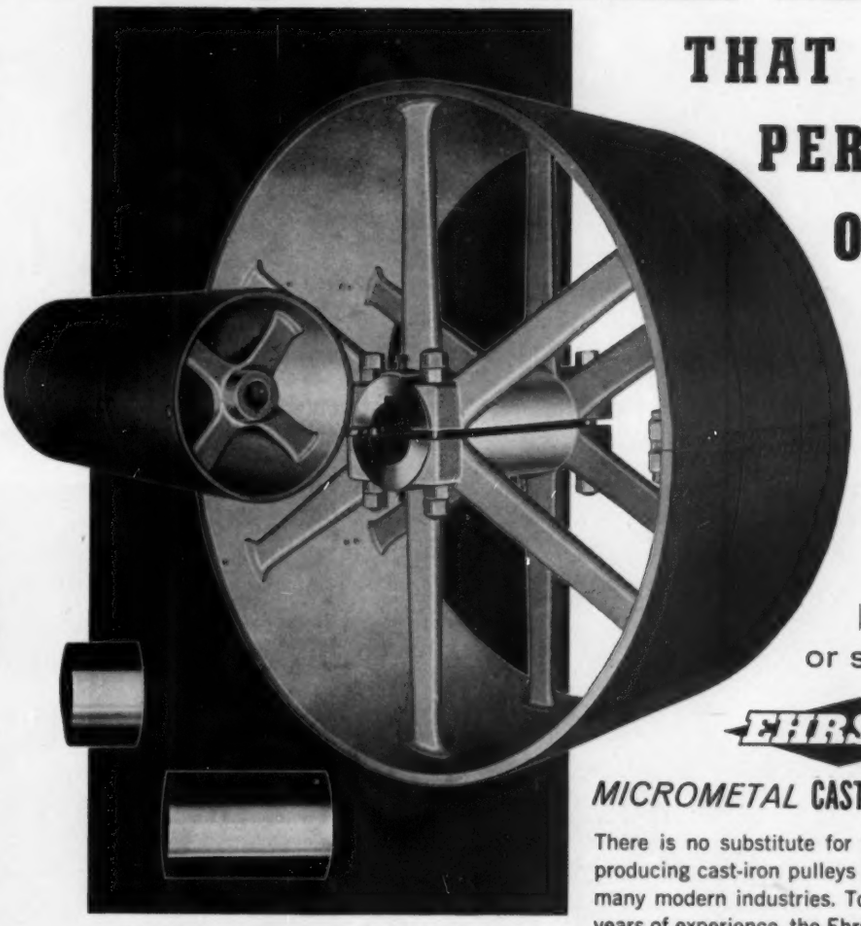
THAT PERFORM ON THE JOB...



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There is no substitute for experience in producing cast-iron pulleys for use in our many modern industries. Today, after 88 years of experience, the Ehrsam Company is still continuing research to produce quality cast-iron pulleys.

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SALES REPRESENTATIVES: THOMER EQUIPMENT CO. • MINNEAPOLIS, MINNESOTA

Sales builders

At training sessions like these, IMC probed selling problems with over 500 fertilizer industry executives.

The latest visual presentation techniques were used to gain maximum impact. Meetings like these helped members of the fertilizer industry realize their full profit potential.

Selling approaches were carefully analyzed . . . from "why people buy" to "getting them to sign on the dotted line." This program has generated impressive sales results in many areas.

Markets were analyzed for sales potential. Participating executives saw demonstrations of practical selling ideas that help keep costs in line, manufacturing forecasts realistic and product specifications suited to area needs.

IN ACTION!

Last year, IMC briefed over 500 fertilizer industry executives on broadening markets . . . meeting objectives . . . closing sales

This fall, IMC Customer Training Meetings will feature technical seminars on better methods . . . more efficient production . . . ways to cut production costs

The IMC Customer Meetings will present technical information in the same interesting and informative manner used in the popular sales training meetings last year. Response to those meetings was immediate and enthusiastic. In 10 cities throughout the country, these two-day sessions were warmly received. Leading fertilizer executives made comments like this:

"This could revolutionize the fertilizer industry in marketing and merchandising. I'm sure glad I attended."

"Our time was well spent. This was the best meeting I can remember attending. It covered fundamentals, not flashy promotion."

"Our group was amazed by the number of good ideas and principles presented. Coverage was excellent."

"This type of meeting should be expanded."

Technical training offered to IMC customers

Now, because of repeated requests from IMC customers, including many who attended Sales Training Meetings, IMC has condensed solutions to the most troublesome technical problems confronting fertilizer manufacturers. Formulation, mechanization, maintenance and trouble-shooting are all part of this practical meeting agenda. Day-to-day problems will be discussed in 11 cities throughout the country.

Plan to attend the IMC Technical Training Meetings — one of which will be close to your city. Check below for time and places.

CITY	DATE
Minneapolis, Minn.	Monday, Tuesday, October 24, 25
Indianapolis, Ind.	Wednesday, Thursday, October 26, 27
Baltimore, Md.	Wednesday, Thursday, November 9, 10
New York, N.Y.	Monday, Tuesday, November 14, 15
Raleigh, N.C.	Wednesday, Thursday, November 16, 17
Toledo, O.	Monday, Tuesday, November 21, 22
Winter Park, Fla.	Monday, Tuesday, November 28, 29
Montgomery, Ala.	Wednesday, Thursday, November 30, December 1
Kansas City, Mo.	Monday, Tuesday, December 5, 6
Tyler, Tex.	Monday, Tuesday, December 12, 13
Jackson, Miss.	Wednesday, Thursday, December 14, 15

AGRICULTURAL CHEMICALS DIVISION

INTERNATIONAL MINERALS & CHEMICAL CORPORATION

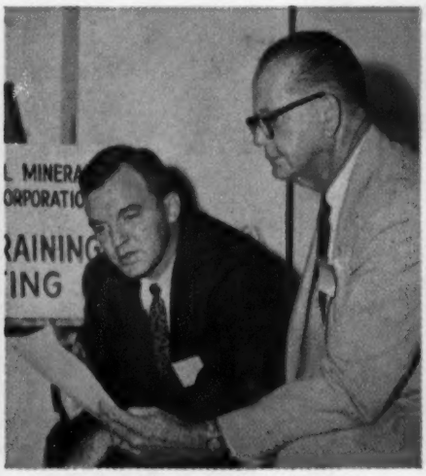
ADMINISTRATIVE CENTER, OLD ORCHARD ROAD, SKOKIE, ILLINOIS, ORCHARD 6-3000

IMC

PRODUCTS FOR GROWTH*

*TRADEMARK

Work sessions helped each executive measure his own progress. These meetings . . . held in 10 cities . . . were well attended and highly praised for their practical and informative content.



Sales problems of individual participants were discussed in detail. These sessions dealt with practical day-to-day matters important to every executive in the industry.

These sessions . . . forerunners of the 1960 technical seminars . . . were part of IMC's continuing program of help to the fertilizer industry.

FO-2-01

PACKAGING

(Continued from page 19)

fertilizer producers to shift to open mouth packaging.

About five years ago the fertilizer industry—attracted by better closure, more siftproofness, and other advantages—started the first major use of the pasted valve bag for fertilizer. This bag had already found wide acceptance in the cement industry, and its use for fertilizer has grown steadily ever since.

Many variations and constructions of the pasted valve bag have appeared on the market.

The stepped end bag was introduced by our company after World War II. This bag is of pasted valve construction with overlapping plies, giving added strength and flexibility, and better closure. (The stepped end bag was originally developed in Europe by the present director of European operations for St. Regis' International Division, Edgar B. Hoppe.)

The pasted valve bag was further improved about two years ago when the "super" stepped end bag was introduced. The construction of this bag provided added strength and siftproofness, and its extremely tight closure provided still more protection for fertilizers and chemicals packed in bags with an asphalt laminated or polyethylene-coated ply.

The use of pasted valve bags has been spurred, to a large extent, by the improved moisture barrier performance made possible by the more recently introduced polyethylene coated sheet, as opposed to the asphalt laminated sheet, the previous industry standard.

The AL sheet served the industry long and well. Natural kraft paper combined with asphalt provided the best and cheapest moisture protection we could devise until the advent of polyethylene. It certainly surpassed the fabric and waterproof paper combinations of the '20s.

Because of its superior moisture barrier and flexibility, the PE-coated sheet overshadowed asphalt laminated. In recent years we have seen many fertilizer producers switching to this sheet in their multiwall package.

In addition to superior moisture barrier performance, PE, by its very nature, remains more flexible than AL in the extreme cold weather conditions under which many fertilizer producers operate. Besides providing better handling and filling on automatic valve packers, bags with a PE-coated ply permit more flexibility and allow the valve closure to form more easily and more positively.

The advantages of the PE-coated were further advanced this year with the introduction of a polyethylene-coated sheet which imparts to the PE sheet moisture barrier performance that is superior to conventionally coated sheets.

Over the years the companies supplying industrial packaging equipment have continually strived to develop new and better machines to fill and close the multiwall bag. Many variations of open mouth and valve bag packers have been introduced to meet the demands for ever-improved production rates, cleanliness of operation, ease of operation and maintenance. But most important the industry has been striving to lower the cost per ton of packaging.

I have tried to show, on the eve of the fertilizer industry Round Table, what we on the packaging side of the trade have been trying to do for the fertilizer industry. We have come a long way from the days of the "cooperage." We are confident that even further progress will be made by the packaging industry in improving materials and equipment, and in continuing the steady reduction of fertilizer packaging costs that has already taken place. These advances would not have been possible without the mutual efforts and cooperation that have so typified the relations of our two industries over the years.

MANGANOUS OXIDE

48% Manganese as Metallic

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Farmers Must Use Pesticides, Says California Dean

LOS ANGELES — American farmers must use chemical pesticides against insect enemies of their crops to insure an abundant and inexpensive supply of high quality, nutritious foods for the nation's expanding population.

This is the opinion of Dr. Daniel G. Aldrich, Jr., university dean of agriculture at the University of California in Berkeley.

Speaking at a recent meeting of the Governor's Special Committee on Public Policy Regarding Agricultural Chemicals in Los Angeles, Dr. Aldrich said:

"We have no alternative but to protect our crops against pests, if we wish to feed the people of California and the U.S."

The leading educator declared that America's ability to produce food in large quantities at low cost is largely attributable to the use of chemicals in agriculture.

"Without these pesticides, we would not have our present supply of many foods, and those that would be available would cost much more," he said.

Dr. Aldrich asserted that chemicals also are partly responsible for the improved quality of produce offered consumers.

"If chemicals were not available to control the damage caused by insects," he said, "present requirements for clean food could not be met in many instances."

Calling attention to the alarm felt by many persons because of "unfounded or exaggerated stories" on chemicals poisoning food, Dr. Aldrich urged agriculture to take steps to allay these fears.

"It is our duty to show the public that the use of chemicals in food production, preservation, and storage is carefully regulated by laws that are strictly enforced by governmental agencies and that farmers recognize a moral responsibility to use properly these chemicals," he said.

Dr. Aldrich pointed out that the research being carried out to control insects is equalled by the amount of work done to determine how much of a residue will be left on crops after treatment with pesticides.

"Before any chemical is recommended for crop protection," he said, "it must be proved that the pesticide can be used safely insofar as the health of the consumer is concerned. The level of all chemical residues must be below the safe limit that has been established by the Food & Drug Administration."

Dr. Aldrich emphasized that University of California scientists recommend only those pesticides that are "safe, sound, and practical," and all other institutions, agencies and industries adhere to the same policy.

"The laws we have to protect the consumer are the best that can be developed with our present knowledge and the enforcement of these laws is such that the consumer need have no fear concerning the food that is put on the market," he said.

August Super Production Tops Year-Ago Tonnage

WASHINGTON — U.S. production of superphosphate and other phosphatic fertilizers during August, 1960 amounted to 191,738 tons, compared with 180,126 tons for the same period in 1959, reported the Bureau of the Census, U.S. Department of Commerce.

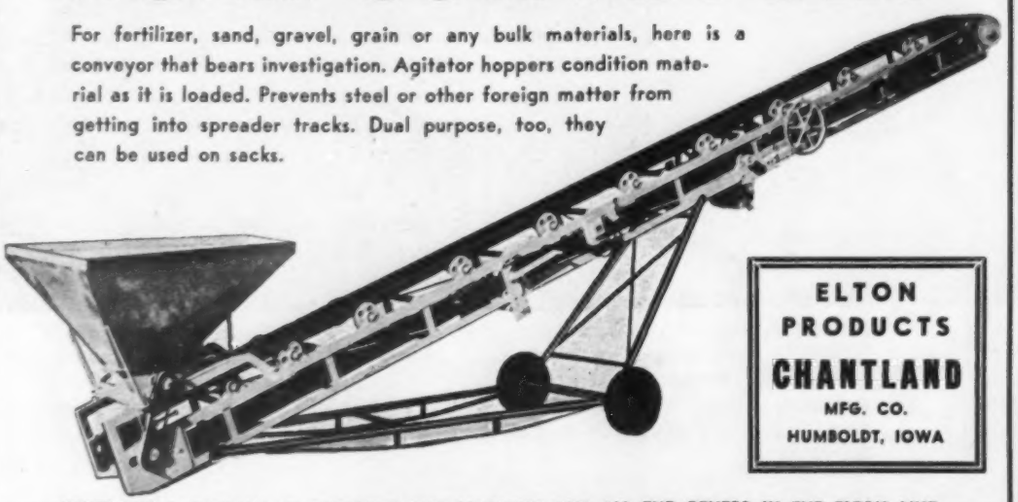
Shipments of superphosphate and other phosphatic fertilizers during the month totaled 149,861 tons, or 18% more than that shipped during the corresponding month last year.

Stocks held by producing plants as of Aug. 31, 1960, totaled 372,608 tons, or 1% more than those held on July 31.

ELTON

BULK CONVEYORS

For fertilizer, sand, gravel, grain or any bulk materials, here is a conveyor that bears investigation. Agitator hoppers condition material as it is loaded. Prevents steel or other foreign matter from getting into spreader tracks. Dual purpose, too, they can be used on sacks.



ELTON PRODUCTS
CHANTLAND MFG. CO.
HUMBOLDT, IOWA

WRITE FOR A CATALOG. IT DESCRIBES THIS MACHINE AND ALL THE OTHERS IN THE ELTON LINE

Borate your Fertilizers...

adding boron boosts profits!

Borating your alfalfa fertilizer can mean bigger profits to you and your customers. Boron, a minor element, does major things for alfalfa. In fact, alfalfa responds so readily to boron that in some cases the yield actually doubles. Ample supplies of boron are so essential to profitable growth of alfalfa that most large producing states recommend *annual* applications. Each ton of alfalfa hay removed from the soil takes with it approximately 1.8 lbs. of borax -- additional quantities are lost by leaching.

Building bigger profits for your customers by supplying this vital element in your alfalfa mixes can also build bigger profits for you. Millions of acres of alfalfa need boron *every* year. So, take advantage of this major market for a minor element. Always consult your state agricultural authorities for specific amounts to use.

Add boron! Add profit!

U.S. BORAX

630 SHATTO PLACE, LOS ANGELES 5, CALIFORNIA

Boron-hungry Alfalfa . . . Dwarfed . . . with yellow or reddened top leaves, stunted; growing tips rosetted. These are nature's distress signals calling for boron.

Top-quality Alfalfa . . . Fertilized with boron, grows lush and strong — provides maximum yields with increased profits. Such vigorous growth shades out weeds and results in longer life stands.

New Chemical Firm Started in Yuma; To Manufacture Insecticides, Weed Killers

YUMA, ARIZ. — Newly formed Yuma Chemicals, Inc., will manufacture and wholesale insecticides, weed killers and defoliants here, it was announced.

Heading the new firm will be Richard Jacoby of Jacoby & Sons and Jay Rathbun of Rathbun Chemicals. Formation of Yuma Chemicals will have no effect on the retail and service businesses which the owners operate separately, they reported.

Both will continue to handle their present line of fertilizers and will add the new line of materials which will be marketed under the company name label.

Upon completion, the $40,000 plant will have a capacity of 6,000 gal. of liquid materials and 50,000 lb. of dry mixtures daily.

Mr. Jacoby, president of the new operation, said the plant will be the first complete operation of its kind in the area and would enable local dealers to meet specific needs on short notice.

The company will be housed in a 40 ft. by 80 ft. steel building now under construction. A second structure is planned to serve as a warehouse.

Jay Curtis, who headed a similar operation at Salinas, Cal., has been named manager of the company.

USI Plans Purchase Of Minnesota Firm

MINNEAPOLIS — U.S. Industrial Chemicals Co., the chemical division of National Distillers & Chemical Corp., has arranged to purchase Minnesota Liquid Fertilizer Co. The announcement was made jointly by B. W. Smith of Minnesota Liquid Fertilizer and Roy F. Coppedge, Jr., president of National Distillers.

The major business activity of Minnesota Liquid Fertilizer Company is distribution of anhydrous ammonia for direct application to the soil. The company has headquarters in Minneapolis and owns 32 ammonia stations in Minnesota.

USI manufactures anhydrous ammonia and other fertilizer raw materials at Tuscola, Ill. and other Midwest locations.

Under National Distillers' management, according to Mr. Coppedge, the Minnesota Liquid Fertilizer Co. and its distributing stations will continue to be operated with the same personnel.

Agro-Vita, Inc., which has been an associated corporation manufacturing and distributing balanced liquid fertilizers, will remain under B. W. Smith's management and will continue to market its products through its existing facilities and the distribution points acquired by USI.

Cotton Council Urges Adequate 1961 Acreage

LUBBOCK, TEXAS — Seeing an end to the surplus of cotton and recognizing the need for adequate stocks, the board of directors of the National Cotton Council has urged the secretary of agriculture to take note of these factors in determining acreage allotments for 1961.

At the conclusion of its two-day meeting here, the board issued a statement recommending that the secretary carefully estimate requirements for U.S. cotton at home and abroad for next season and set the allotment at a level which will produce the quantity of cotton needed to meet these requirements. This likely will mean an increase in acreage allotments.

Under the law, the secretary is required to announce the marketing quota and acreage allotment for the 1961 crop not later than Oct. 15, 1960.

The council recommendation notes that the prospective carryover on Aug. 1, 1961, is too low to justify any deduction from next season's marketing quota for the purpose of reducing the carryover.

In addition, the recommendation asks the secretary to defer setting any fixed pattern for determining what is a desirable carryover of cotton, pending further study by the industry and the U.S. Department of Agriculture.

Georgia Plant Installs Scrubber for Fumes

MOULTRIE, GA. — C. O. Smith Guano Co. in Moultrie has installed a 20-ft. scrubber which officials of the company say will materially alleviate fumes from the acid plant.

The scrubber, installed at a cost of $30,000, is a masonry tower that absorbs acid fumes as they pass through. It is located at the end of the manufacturing process. It was designed by E. M. Jones, chief engineer for the Tennessee Corp., Copperhill, Tenn.

Carolinas-Virginia Pesticide Group Sets Meeting Dates

RALEIGH, N.C. — The annual meeting of the Carolinas-Virginia Pesticide Formulators Assn. will be held at the Carolina Hotel in Pinehurst, N.C., on Dec. 5-7.

Program plans include talks, discussions and a golf tournament.

RETIRED V-C OFFICIAL D'ES

RICHMOND, VA —Alexander Seddon Jones, Jr., a retired official of the Virginia-Carolina Chemical Corp., died Oct. 1 at the age of 83. A native of Retreat, Orange County, Mr. Jones was for many years manager of the Richmond sales office of V-C. He joined V-C here in 1900 as a clerk, and eventually rose through the ranks to become manager of the sales office.

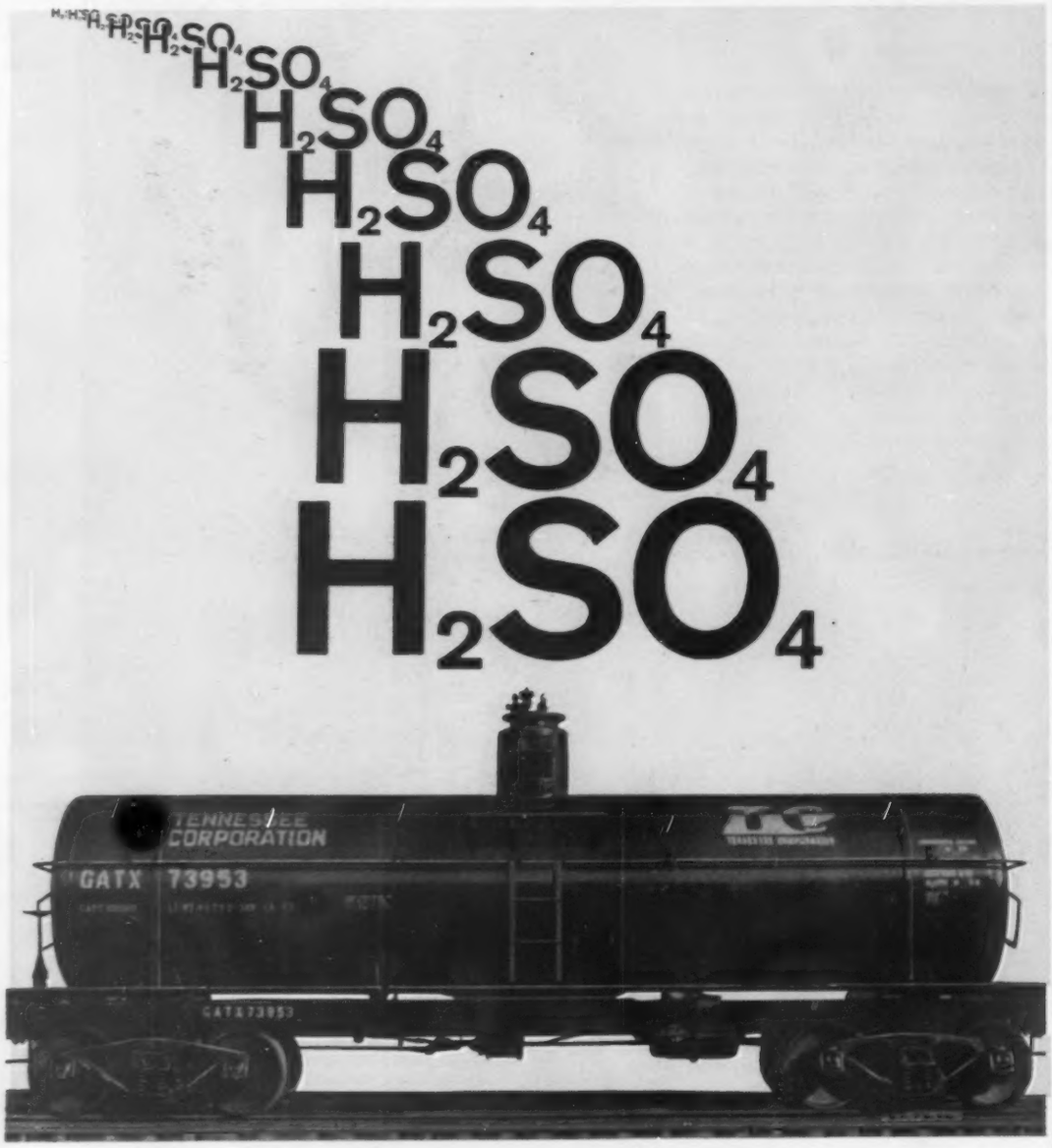
CRANBERRY GROWERS OPTIMISTIC

BOSTON—Massachusetts cranberry growers, despite two hard knocks, the "Cranberry Scare" and Hurricane Donna, are optimistic for a cranberry comeback this fall. With the state harvest predicted at a record 700,000 barrels, growers are jubilant. Barnstable County alone is expected to yield 90,000 barrels.

However, the memory of last year's pronouncement in Washington which blackened the name of the cranberry, still lingers on.

George C. P. Olsson, president of the National Cranberry Assn., says the industry was encouraged by a record sales upshot last Easter following a special promotional campaign.

"We won't really know how the market will hold this year," he said, "until after the Thanksgiving and Christmas holiday buying."



Satisfying the Southeast's Sulfuric Acid Requirements for more than fifty years.

Highest quality virgin acid from Copperhill, Tennessee. 60° Be, 66° Be, 98% Sulfuric Acid and all grades of Oleum.

For more information see our inserts—
Chemical Week Buyers Guide Pages 173-176
Chemical Materials Catalog Pages 551-554

TENNESSEE CORPORATION
612-629 GRANT BUILDING, ATLANTA 3, GEORGIA

Arcadian® News

Volume 5 | For Manufacturers of Mixed Fertilizers | Number 10

CASH IN ON THE TREND TO N

Put More N in N-P-K

Tests show that high-nitrogen fertilizers produce big yields.

The stage is set for greater profits in manufacturing and selling mixed fertilizers. Farm crop needs, experiment station recommendations and fertilizer plant experience all point the way—to more N in N-P-K!

Farmers and crop experts alike agree that practically all of our leading crops need more nitrogen than any other plant food. And on a majority of soils, a high-nitrogen mixed fertilizer can supply all the plant foods needed in one trip across the field. Sales figures show that most of the tonnage of mixed fertilizer sold is lower in nitrogen than the needs of the crops on which the fertilizer is used. And, though side-dressing nitrogen has increased fast, even this additional nitrogen has not brought the total volume of nitrogen into balanced ratio with other plant foods.

Habits Can Change

On the other hand, progressive farmers everywhere have been accepting the 2-1-1, 3-2-2 and 1-1-1 ratio fertilizers as fast as manufacturers have made them available. For speed and ease of application, they have changed to 16-8-8 instead of 10-5-5; 13-13-13 instead of 6-6-6; and other higher-analysis mixtures in place of fertilizers having the same ratio but lower plant food content. When 15-10-10, 12-6-6, 16-4-8, 12-12-12, 15-15-15 and other high-nitrogen, high-analysis fertilizers have been offered, they have met with demand among leading farmers.

Some of these leading farmers have been ahead

(continued on following page)

(continued from preceding page)

of the colleges and industry in demanding these better and more concentrated fertilizers made in the proper ratio to meet crop needs. But now the wheel has turned. Most states are now recommending these 2-1-1, 3-2-2 and 1-1-1 ratio fertilizers in concentrated form. Thousands of field and plot tests by experiment stations, farmers and dealers have shown that these new fertilizers help farmers make more money with less work.

The situation looks complicated, but is basically simple. Farmers who used to apply 100 or 200 pounds of fertilizer per acre have found that it pays to use 400, 500 or even 1,000 pounds of the same analysis per acre. Their logical next step has been to find that this same large amount of plant food in more concentrated fertilizer pays even better. It saves the farmer labor, freight, time and cash.

Wake Up the Laggards

Now that the leaders have accepted and proved the value of high-nitrogen, high-analysis mixed fertilizers, this is the ideal time to sell other farmers on the same practical method of getting higher yields and profits. It pays to tell 'em in every way you can.

More N—More Profit

Obviously, this calls for greater production of high-nitrogen, concentrated mixed fertilizers. And, there is money in this for you. You save many ways, and you profit many ways, by producing high-N fertilizers.

1. By selling more nitrogen in mixed fertilizer you can get more profit per pound of nitrogen sold.
2. You get more of the total fertilizer market by selling more N in N-P-K.
3. You cut your costs other ways—less freight, less storage, less handling, fewer items to inventory per unit of dollar sales.
4. You get greater dollar volume through your plant producing high-nitrogen mixed fertilizers.
5. You keep ahead of your customers—and improve your reputation for supplying fertilizers that make money for farmers—because every bag supplies what the crops need.

Yes, the year ahead is a good time to take advantage of the growing enthusiasm for more N in N-P-K. Don't get behind your customers in the high-N parade—get your customers behind you. Start now to put more N in N-P-K and *More Money in Making Fertilizer!*

KEEP SALESMEN *PRODUCING* DURING THE OFF-SEASON

Fertilizer manufacturers have been known to remark that the industry would be better off if all salesmen were "off the road" between seasons. During such periods, farmers and dealers are usually more interested in beating down prices than in placing orders. They talk convincingly—and usually with exaggeration—about the "deals offered by competition." All too often salesmen, over-anxious to move material, end up by being induced to undermine their own price structure!

The moral is clear. Don't let your salesmen and dealers become mere "listening posts" in the off-season. Tell them to avoid entering into premature price negotiations with accounts that are merely "window shopping."

Take Positive Action

The best way to handle the chronic off-season problem is to plan to keep your salesmen and dealers busy with constructive activity during fall and winter months. Here's a list of off-season projects. Check this list for ideas. You may be surprised at how much you can do to make slack time more profitable.

OFF-SEASON PROJECTS FOR PROFIT

- ☐ Document testimonials, photos and yield response to last season's fertilizer application for use in future sales promotion.
- ☐ Design and install dealer identification signs and decals.
- ☐ Do some customer entertaining where it is necessary to get better acquainted or show appreciation to a big account.
- ☐ Survey your weak spots with an eye toward new prospects.
- ☐ Build good-will with agricultural officials and people in related fields who can influence fertilizer use.
- ☐ Review transportation methods for ways to improve service and cut costs.
- ☐ Promote needed application equipment in your market areas.
- ☐ Look for specialized applications which might offer an untapped market for your products.
- ☐ Correct and build up mailing lists.
- ☐ Plan next season's advertising program and the best methods for getting dealers to tie in.
- ☐ Hold meetings and field days with farmers and dealers.
- ☐ Organize your soil testing program.
- ☐ Conduct training sessions on selling techniques for your salesmen.
- ☐ Plan to introduce new high-nitrogen grades which mean more profit for you and better results for your customers.

Do Your Men Know How To Handle Your Equipment?

Getting plant personnel to operate and maintain equipment efficiently and economically is a serious problem to many fertilizer manufacturers. Ignorant and reckless handling of equipment can cause low output, costly break-downs, expensive repairs and production delays.

When one leading fertilizer manufacturer discovered that this condition was increasing his overhead and reducing his profits, he decided to do something about it. He called on a Nitrogen Division technical service man for assistance. Working together, they found a practical way to solve the problem.

Investigation showed that the men who worked with the equipment every day simply did not know enough about it to handle it properly. They needed training in operation and upkeep.

Operation and Maintenance Clinic

To obtain this training quickly and economically, it was decided to hold a clinic to be attended by key personnel from the fertilizer manufacturer's plants and invited representatives of the companies that made the equipment used in the plants.

Prior to the conference, the fertilizer men canvassed their co-workers and developed a list of pertinent questions. The equipment manufacturers came prepared to answer the questions and to demonstrate proper operation and maintenance. During the clinic, the men had full view of the equipment discussed and were able to disassemble various parts for clearer understanding.

For the fertilizer manufacturer, the result of the two-day clinic has been bigger production, lower overhead and better profits through a marked improvement in the use and the upkeep of the equipment in his plants. For the equipment manufacturers, the clinic was an opportunity to build better customer relations and to learn more about the problems that arise in actual use of the equipment they make and sell.

SOIL TESTS *NOW* CAN BE SALES-MAKERS FOR YOU

The biggest service you can perform for most of your farmer customers right now is to encourage them to test their soils. Help them to get the real facts on the plant foods their soils need to produce profitable crops and you're on sound ground to build bigger sales and customer satisfaction.

Soil tests show what the land needs. Lime, phosphorus, potash and organic matter or nitrogen levels are all important to the success of the next crop. When a farmer gets a soil test report, he's taken his first big step in planning a practical fertilizer program. And he is a hot prospect for some of the specific fertilizers you stock.

A soil test helps you get down to cases fast in selling. And when your dealers promote soil tests in the fall, you get a chance to sell fall fertilizers as well as spring fertilizers. Surveys in many areas show that farmers who use soil tests are way ahead of their neighbors in amount of fertilizer used.

Test Often

Some farmers run a soil test every third or fourth or fifth year. But when they change their rotation or crop plan, or feel the need to change their production goals to aim for higher yields, an immediate soil test is important. It takes the guesswork out of planning how to make more fertilizer produce more profit. Compared to the old shotgun approach of using the handiest, or cheapest, fertilizer mixture, the soil test is the rifle that enables farmers to shoot accurately for high yields. And farmers who continue to make money become loyal customers.

Dealer Promotion

Several systems of getting soil samples work well for dealers: (1) The farmer collects samples following directions of extension service or dealer. (2) The salesman collects soil samples. This works best if the farmer goes along. (3) The dealer hires a man to take samples, as agreed to previously by the farmer. (4) Special soil test drives, with extension service, dealers, and vo-ag or 4-H members cooperating, get a large percentage of fields tested for an area.

When the dealer pays for farm soil tests, he can automatically get a copy of the test report, and can easily help the farmer analyze his fertilizer needs. Many farmers, especially those new to soil testing, like to have someone consult with them on soil test recommendations appearing on the report. This also enables the dealer to point out that average recommendations may not be high enough for the most profitable yields. The proper proportion of plant foods, with larger quantities per acre, are often the better money-maker.

Plan a soil test program now. It's the top opportunity of the season to get new customers and to make old customers bigger buyers of your fertilizer.

Arcadian® NITROGEN SOLUTIONS

	CHEMICAL COMPOSITION %						PHYSICAL PROPERTIES		
	Total Nitrogen	Anhydrous Ammonia	Ammonium Nitrate	Urea	Water	Neutralizing Ammonia Per Unit of Total N (lbs.)	Approx. Sp. Grav. at 60° F	Approx. Vap. Press. at 104° F per Sq. In. Gauge	Approx. Temp. at Which Salt Begins to Crystallize °F
NITRANA®									
2	41.0	22.2	65.0	—	12.8	10.8	1.137	10	21
2M	44.0	23.8	69.8	—	6.4	10.8	1.147	18	15
3	41.0	26.3	55.5	—	18.2	12.8	1.079	17	-25
3M	44.0	28.0	60.0	—	12.0	12.7	1.083	25	-36
3MC	47.0	29.7	64.5	—	5.8	12.6	1.089	34	-30
4	37.0	16.6	66.8	—	16.6	8.9	1.184	1	56
4M	41.0	19.0	72.5	—	8.5	9.2	1.194	7	61
6	49.0	34.0	60.0	—	6.0	13.9	1.050	48	-52
7	45.0	25.3	69.2	—	5.5	11.2	1.134	22	1
URANA®									
6C	43.0	20.0	68.0	6.0	6.0	9.3	1.180	12	39
6M	44.0	22.0	66.0	6.0	6.0	10.0	1.158	17	14
10	44.4	24.5	56.0	10.0	9.5	11.0	1.114	22	-15
11	41.0	19.0	58.0	11.0	12.0	9.2	1.162	10	7
12	44.4	26.0	50.0	12.0	12.0	11.7	1.087	25	- 7
13	49.0	33.0	45.1	13.0	8.9	13.5	1.033	51	-17
DURANA*									
DURANA is a trade-mark of Allied Chemical Corporation.	37.0	13.3	53.4	15.9	9.4	7.2	1.235	0	36
U-A-S®									
A	45.4	36.8	—	32.5	30.7	16.2	0.932	57	16
B	45.3	30.6	—	43.1	26.3	13.5	0.978	48	46
[illegible]	82.2	99.9	—	—	—	24.3	0.618	211	-108

*DURANA contains 8% formaldehyde.

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EFFICIENT PLANT . . .

Florida Firm Completes New $100,000 Enlargement Plan

PALMETTO, FLA. — Completion of a $100,000 building and remodeling program has been announced by Producers Supply, Inc., of Palmetto. J. E. B. Asbell, president, reports that the improvement and enlargement of facilities consist of a new structure added to the existing building. The new part, he says, is of all-steel and concrete construction, 60 ft. wide by 200 ft. long, with a reinforced concrete floor.

Walls are also of reinforced concrete, 10 ft. high, forming a base for 10-ft. steel walls, making the total wall height 20 ft. Covering the new building is an "A" type clear span steel roof.

A reinforced concrete platform runs along the long side of the building, facing the railroad. The platform, 200 ft. long and 9 ft. wide, has a canopy over its entire length. At the end of the building, the platform has a ramp which makes for easy handling of materials to and from trucks.

Installed in this new building are two elevators, one providing unloading facilities and the other for base mixing purposes. The basing unit, including one ton fertilizer batch mixer, is also equipped to manufacture nitrogen solution base. Also in the new building a 98 ft. overhead conveyor has been installed to distribute the different materials and base to the various bins in the building. This conveyor is a shuttle type, reversible, belt conveyor.

In addition to the basing and unloading equipment an additional 55 ft. superstructure has been built to house a 12 compartment cluster hopper system. The cluster hopper system includes a 50 ft. elevator, 12 five ton units in the cluster hopper, and one ton weigh hopper and scale and the conveyor to carry the weighed ton of materials to the mixing elevator.

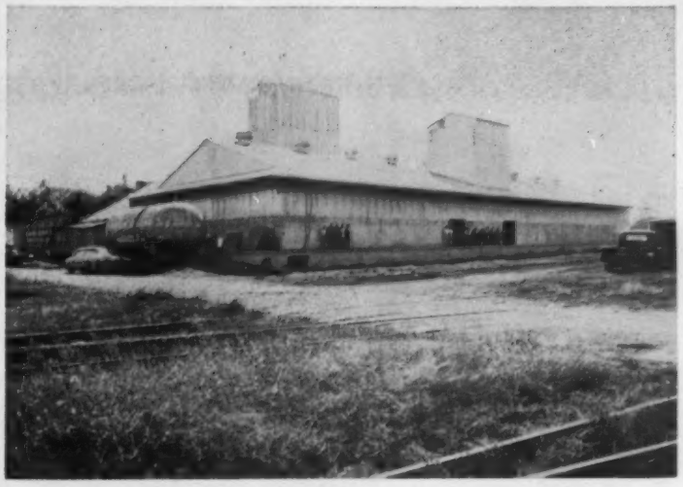
The building was constructed by the Atlas Construction Co., Inc., of Sarasota, Fla., which company also assisted in the installation of the equipment and machinery in the new building. The cluster hopper unit was constructed and installed by the Allen G. Clements Co. of Moultrie, Ga. The remainder of the equipment including the two trackside elevators and basing equipment and also the overhead conveyor were manufactured by the Atlanta Utility Works of East Point, Ga. The solution nitrogen equipment was supplied by the J. M. Tull Metal & Supply Co. of Atlanta.

The Producers Supply, Inc., now employs 20 people and in addition to the facilities in Palmetto also maintains a company owned warehouse in Fort Myers, for the convenience of customers in that area.

During the fertilizer year ending June 30, 1960, the company manufactured and sold more than 11,500 tons of mixed fertilizer.

The company maintains its own fleet of trucks for delivery of its goods directly to the farms, groves or pastures of its customers.

Officers of the firm, in addition to Mr. Asbell, president, include Earl B. Frierson, vice president and treasurer, and Mrs. J. E. B. Asbell, secretary.



ENLARGED PLANT—Exterior of Producers Supply, Inc., Palmetto, Fla., showing 200-ft. length of plant with reinforced concrete platform running full length of building. Canopy over platform protects against rain. The company employs 20 persons, some of whom are pictured on the platform. Proximity to railroad adds to ease of receiving raw materials and shipping from the plant.

INSIDE NEW PLANT—Putting finishing touches on enlarged fertilizer production plant of Producers Supply, Inc., Palmetto, Fla. Modern manufacturing and material handling equipment has been installed in the new portion of the plant as part of the $100,000 building and remodeling program. Workmen have since completed their construction and the plant is now reported to be operable.

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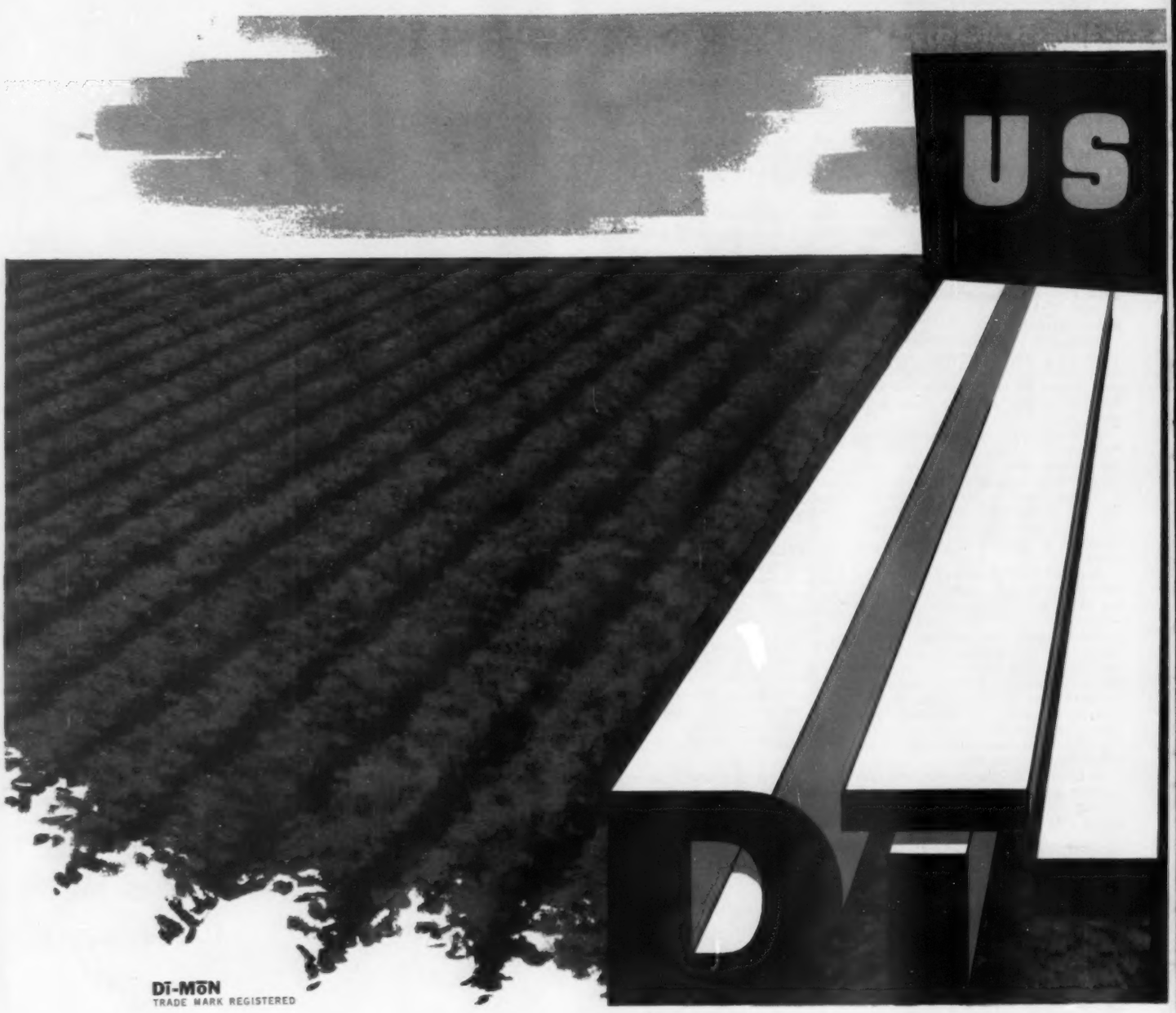

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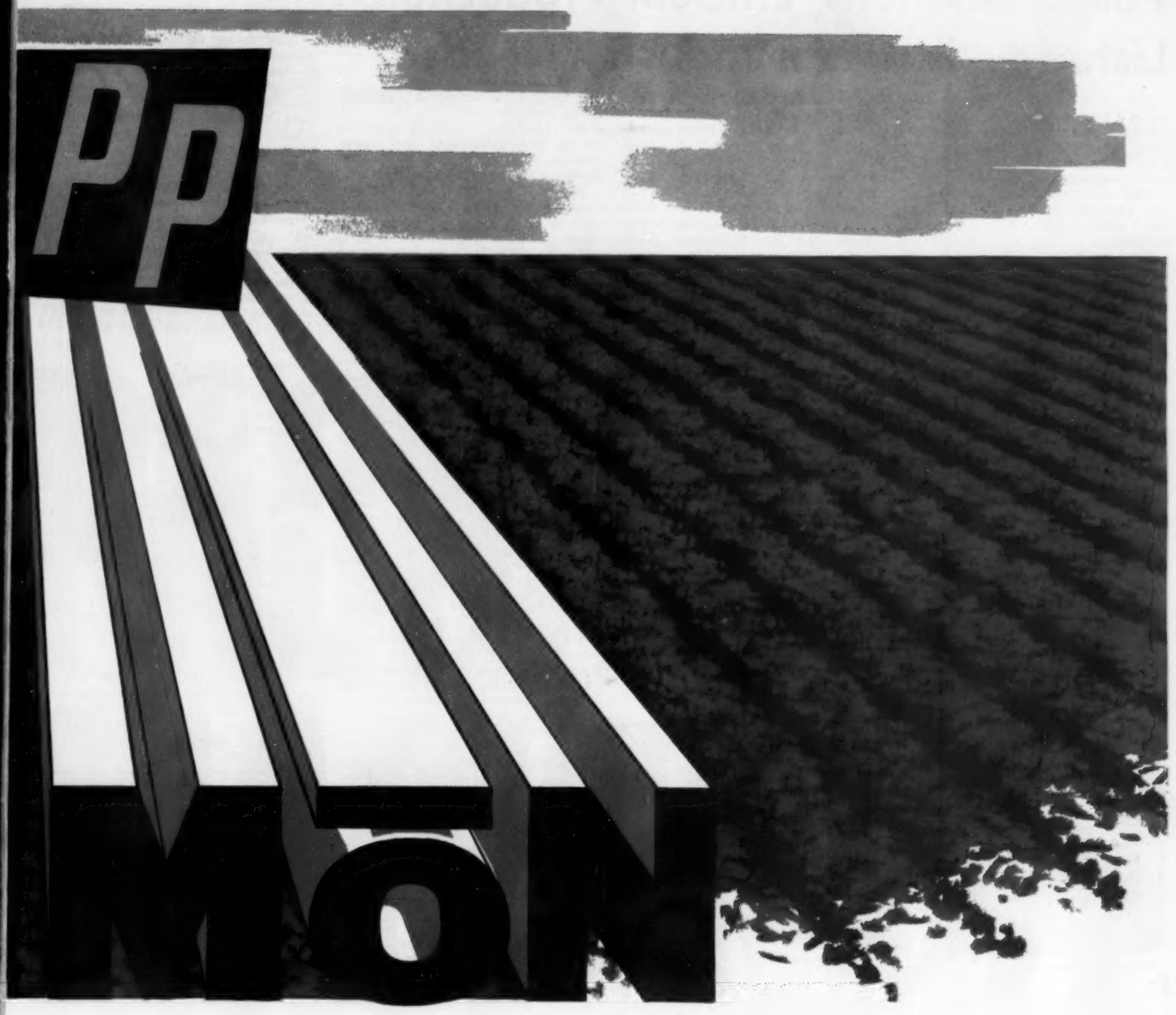

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Public Relations, Efficient Production Listed as Fertilizer Industry Needs

ATLANTA, GA. — Agriculture needs a combination of better public relations, greater production efficiency, better agricultural legislation and more intensive farmer educational programs.

This was the opinion expressed by four panelists at the Fifth Southeastern Fertilizer Conference in Atlanta, recently.

"The need for better public relations in agriculture is now more acute and has more far reaching implications than almost any other confronting agriculture," L. Y. Ballentine, North Carolina commissioner of agriculture, pointed out in his opening panel talk.

"In fact, I would go so far as to say that meeting other needs will be contingent upon how well we meet the need for better public relations," he said.

Farming is suffering from "pernicious anemia in public relations," Mr. Ballentine noted, although, "there are times when it would seem more proper to call it 'malicious' anemia.

"Professional help definitely is needed and all the industries supplying, and supplied by, farmers are members of the agricultural family. This illness is very much a family affair.

"The public generally sees farming as one of the last of the unskilled operations, involving no more investment than the farmer's elbow grease.

"What the public thinks it knows to the farmer's discredit is not half so dangerous as its complete ignorance about the American farmer's magnificent achievements and vital contributions to our national health and safety," Mr. Ballentine added. "Such ignorance now poses a threat to this country's whole future."

As to lack of public relations, Mr. Ballentine asked how many people know that "a cotton shirt costs more to be laundered one time than the farmer gets for all the cotton in it; that the cellophane bag containing carrots costs three times as much as the carrots in it, and that the label on a can of tomatoes costs more than the farmer gets for those tomatoes."

The commissioner called for assistance by the whole agricultural family to work together to change the climate of enmity which surrounds the farmer by telling the "true" story of American agriculture.

He admitted that the job was big but that it can, must and will be done.

Speaking on production efficiency, Dr. Earl Butz, dean of agriculture at Purdue University, said that the biggest bargain the American people get is the food they eat.

He called for continued emphasis on agricultural research and education as a "must" for a productive, prosperous and expanding America.

Donald R. Matthews, U.S. congressman from Florida, said better agricultural legislation was needed. He cited the pioneering efforts in agricultural legislation and pointed out that abundance of food today in large measure is a result of far sighted legislation of former years.

Mr. Matthews said he believes that the need is for an honest, insistent, wholehearted effort on the part of all of the farm organizations to try to agree on the legislation necessary for American agriculture.

Education, and specifically agricultural extension education, can contribute to the solution of what agriculture needs, W. A. Sutton, director of the Georgia Agricultural Extension Service, pointed out.

Mr. Sutton cited Georgia's Intensified Soil Fertility Program which is aimed at hiking agricultural income by $400 million annually by 1965 as an educational tool to help meet the needs of agriculture.

Basic purpose of the program, Mr. Sutton said, is to "(1) make farmers and business leaders more conscious of the major role fertilizer and lime play in making a better Georgia Agriculture, (2) to motivate farmers to carry out fertilizer and lime practices based on soil testing, (3) to increase farm income by sound fertilization and management methods, and (4) to help people understand more clearly that the county agent is the connecting link between the land-grant college and the people of the state."

He pointed out that survey results of the program reveal that the effort is having sufficient impact on Georgia farmers and on a great many other Georgians as well.

Some startling figures on results of the Intensified Soil Fertility Program carried out by the agricultural extension service of the University of Georgia were revealed by Mr. Sutton.

Since the program's inauguration in 1957, consumption of plant nutrients climbed from 328,077 tons to 393,200 tons in 1959. Consumption in 1950 amounted to 221,052 tons.

In Colquitt County, total farm income jumped from $14,132,000 in 1957 to $19,015,299 in 1959.

In Coffee County the farm income figure for 1957 was $14,600,000 and in 1959 the total was $20,254,200.

Another comparison cited by Mr. Sutton was the trend in fertilizer consumption in Georgia as compared with other South Atlantic states. In 1950, Georgia consumed 26% of the total for the region. By 1957, this had climbed only to 31%. However, by 1959, Georgia's share of the regional total had jumped to 39%.

In responding to the portion of the panel concerned with agriculture's needs, Dr. Robert Q. Parks, W. R. Grace & Co., said that industry's responsibility for the future of agriculture is to make it sound and prosperous by getting farmers to use industry's product.

"How do we discharge this heavy responsibility?" he asked. "We are all familiar with the overwhelming volume of proof that use of adequate quantities of the proper fertilizers gives more efficient crop production —lower cost production per bushel or per bale—or more profitable production!

"If farmers were using the quantities of fertilizer recommended by experiment station and extension service workers, fertilizer sales would be more than doubled! They are at least minimum economic recommendations, and it's easy to prove that using the fertilizers recommended would result in more efficient, lower cost crop production.

"The fertilizer industry stands ready to produce adequate quantities of all the kinds of fertilizers that are needed—good quality products, well packaged, readily available. We have built a better mouse trap, but the world doesn't seem to be beating a path to our door!

"It seems obvious that something is drastically wrong. We have improved the technology of fertilizer production—made it better, more efficient, and lower cost. We have improved the agronomy of fertilizer use, and the engineering of its application. And, by and large, we're being rather patient as we sit around waiting for farmers to come in and take our product away from us.

"It seems to me that if a man builds 'a better mouse trap,' he would be well advised to get low production costs, be sure he has good distribution coverage, and set up an adequate advertising and sales promotion budget. Further, if he's going to set up in business out in the woods, as indicated by one philosopher, he'd better divide up the sales territories still further, and put several extra men on the road.

"The fertilizer industry has a broad line of high quality fertilizers. For each $1 invested in such fertilizers, experimental results show $2 to $5 or more return. Yet, broadly speaking, farmers are using less than half the fertilizer required for more profitable production. Why? Either we're not getting the story to farmers, or they don't believe it. In either event, I think we must conclude that we're not putting our story across. And if that's the case, then we are not discharging our responsibility for the future of agriculture. This may sound facetious, but it's not.

"The fertilizer industry has the obligation to sell to the farmers, the kinds and quantities of fertilizers they need for most profitable production. We are not discharging that obligation because we're not selling enough fertilizer.

"Why is it that we're not getting our story across? Let's work backwards from our ultimate consumer, the farmer. Our first direct sales contact is usually the fertilizer dealer. Does he really understand the fertilizer story? Is he really selling? Usually, I'm afraid, he's

(Turn to **CONFERENCE**, page 37)

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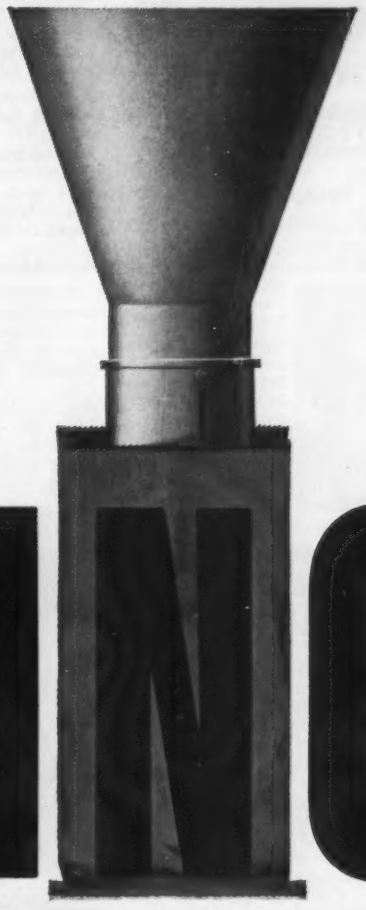

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INDUSTRY PERSONNEL NEWS

Named Research Director

WASHINGTON — Dr. Marion D. Barnes has been appointed to the position of industrial research director of the recently formed Sulphur Institute in Washington.

Dr. M. D. Barnes

The institute, supported by basic producers of sulphur and pyrites, will conduct a world - wide research program on the uses of sulphur in all its forms by working through those private companies and public institutions best qualified to do the job. Dr. Barnes will have responsibility for planning, initiating and pursuing research projects in the industrial field.

Dr. Barnes, formerly assistant research director with Monsanto Chemical Co.'s inorganic division, received his Ph.D. in physical chemistry from Columbia University in 1943 and has had extensive experience in teaching and research. A graduate of the University of Arkansas in 1936, he taught chemistry in the College of the City of New York from 1936 to 1940, and was an instructor in Columbia University from 1942 to 1946. Dr. Barnes was in charge of the agricultural research program for the Lion Oil Co. from 1946 to 1956, and from 1956 to 1960 he directed inorganic agricultural research at Monsanto.

Research, Development Head

NEW YORK—Maurice F. Dufour, vice president, has been appointed director of research and development for Freeport Sulphur Co., announced Langbourne M. Williams, chairman of the board.

He will be responsible for research and development activities in all of Freeport's fields of interest, including operations and new enterprises.

New Technical Director

CHICAGO — Dr. Marvin W. Sage has been named technical director of Hodag Chemical Corp., Skokie, Ill. The announcement was made by Sheldon E. Kent, president of the suburban Chicago manufacturer of surface active chemicals.

Dr. Sage will be responsible for overall supervision of laboratory operations, including research and product development. He holds B.S., M.S., and Ph.D. degrees from the University of Chicago, and wrote his doctoral dissertation under Prof. M. S. Kharasch on Reactions of Free Radicals in Solution.

Bemis Manager

ST. LOUIS — Charles E. Hinman has been named resident manager of the Bemis Bro. Bag Co. paper specialty plant in Fullerton, Cal., announced A. L. Park, manager, paper specialty plants.

Mr. Hinman has been a sales representative for Bemis since 1954, serving in Wichita, Dallas, St. Louis and Minneapolis.

Receives Board Position

STANFORD, CAL. — Christian de Guigne III, chairman of the board of the Stauffer Chemical Co., has been named to the board of directors of Stanford Research Institute, Inc.

Mr. de Guigne is board chairman of the International Science Foundation, and a member of the boards of the Bank of California, the de Young Museum Society, the Society of California Pioneers, and the Pacific Telephone and Telegraph Co.

Plant Superintendent Chosen

HOLLAND, MICH.—H. R. Smith, manager of the Smith-Douglass Co.'s Holland plant, has announced the appointment of Kermit J. Mosley as plant superintendent.

Mr. Mosley was formerly supervisor of the Norfolk, Va., pelletizing plant. He has been employed by Smith-Douglass since 1955.

Assistant Sales Manager

NORFOLK, VA. — F. S. Royster Guano Co., Norfolk, has appointed Don R. Branch assistant sales manager of its Charlotte, N.C., sales office.

Mr. Branch was transferred from Royster's Jackson, Miss., sales office, where he was a sales representative in northeastern Mississippi. He graduated from Mississippi State College in 1951.

Florida Transfer

SKOKIE, ILL.—Albert A. Guffey has been named supervisor of chemical development at International Minerals & Chemical Corp.'s experiment station at Mulberry, Fla.

Mr. Guffey will be responsible for the chemical engineering and pilot plant activities undertaken at the experiment station, according to Lewis Barry, manager of the station. Mr. Guffey was production superintendent at the Bonnie, Fla., phosphate chemicals plant before his transfer.

To Direct Advertising

KANSAS CITY, MO. — W. Scott James has been appointed director of advertising for Chemagro Corp., manufacturer of agricultural chemicals. He was formerly sales manager of the eastern region and served as advertising manager.

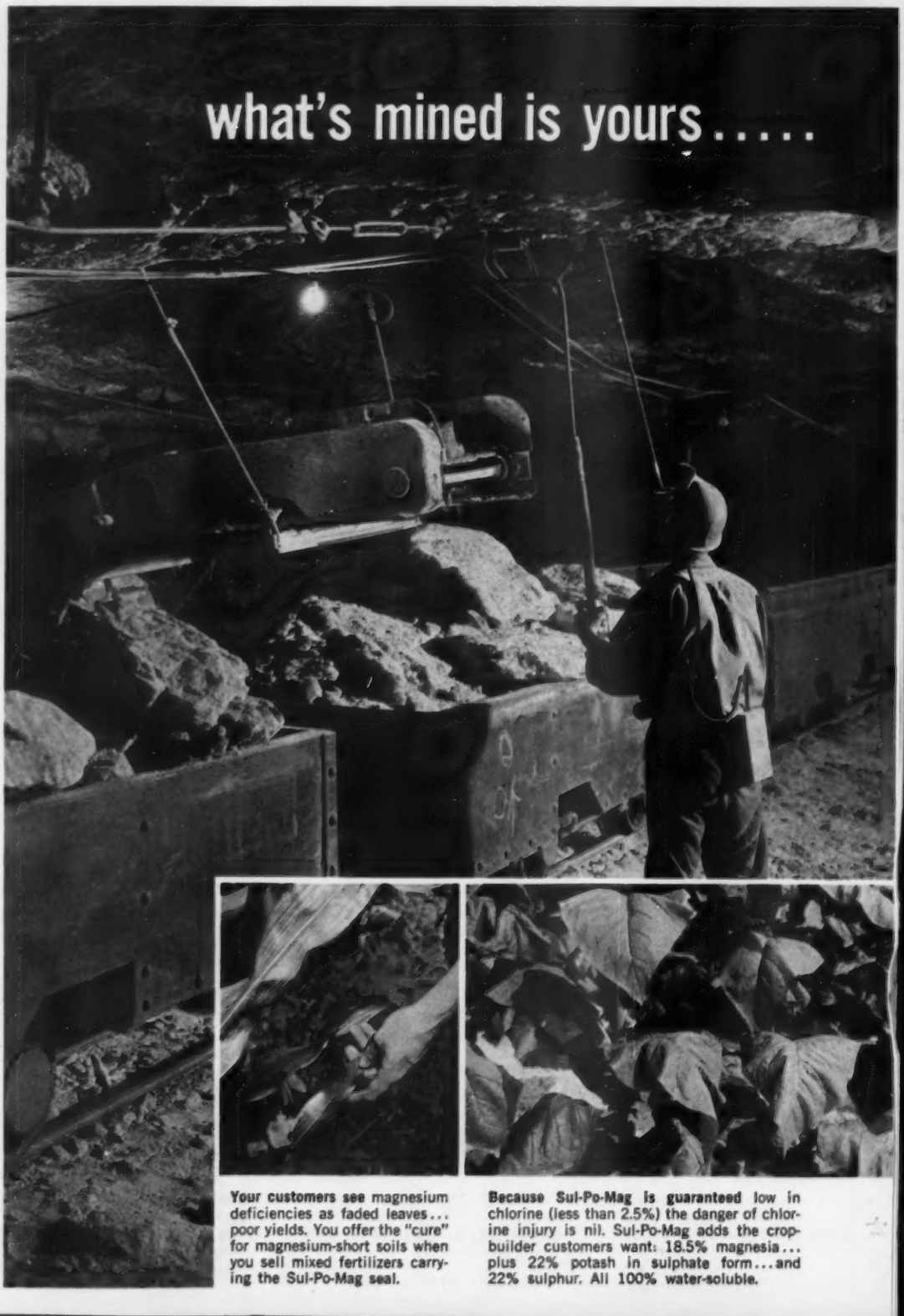
Mr. James will be located at the company's headquarters in Kansas City. He will be responsible for all advertising, public relations and sales promotion activities.

A graduate of the University of Maryland, Mr. James served as assistant to the president prior to becoming sales manager of the eastern region.

Cyanamid Promotes Two

NEW YORK—The promotion of two executives of American Cyanamid Co.'s agricultural division was announced recently by C. D. Siverd, divisional general manager.

Frank Cooper, formerly manager of services for the Cyanamid agricultural center, has been appointed division general services manager and will report to the general manager. Mr. Cooper, a science graduate from McGill University, Canada, joined Cyanamid in 1937 and since then has held several managerial positions



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within the Lederle and agricultural divisions.

Named to replace Mr. Cooper is R. P. Popino, who prior to this new appointment was plant manager for Cyanamid's Princeton plant. Mr. Popino's new title is manager, agricultural center services, reporting to the division general services manager. He is a graduate of the City College of New York where he received his B.S. in chemistry. Mr. Popino joined the company in 1945 and since then has held several managerial positions in plant processing, production, and management.

Vice President Named

BERKELEY, CAL. — Howard G. Conley has been named vice president in charge of sales at Pacific Coast Guano Co. J. G. Hollingshead was named vice president in charge of purchasing and manufacturing, and P. V. Weingart was named treasurer.

Ashcraft-Wilkinson Salesman

DES MOINES, IOWA—George S. Carter will represent Ashcraft-Wilkinson Co. in Iowa and adjoining states, announced George W. McCarty, chairman of the firm.

Mr. Carter joined Ashcraft-Wilkinson in May as a sales trainee. He is a graduate of the University of Missouri with B.S. and M.S. degrees in soils. He will reside in Des Moines and work out of the company's office here.

Cyanamid Appointment

WILLOW ISLAND, OHIO — The appointment of Roy R. Smith to the position of services supervisor at American Cyanamid Company's Willow Island plant has been announced by A. C. Fennimore, plant manager.

Mr. Smith, a member of the Cyanamid organization since 1950, has spent his entire service in the Willow Island plant's maintenance department. Prior to his recent promotion, he was assistant foreman in the maintenance department's instrument section. He is a resident of Waverly, W.Va.

Monsanto Appointment

ST. LOUIS—J. R. Glatthaar of St. Louis, assistant director of industrial sales for Monsanto Chemical Company's Inorganic Chemicals Division, has been appointed assistant director of marketing for the company's Overseas Division.

Mr. Glatthaar joined Monsanto in 1939 as a chemist at its William G. Krummrich Plant, Monsanto, Ill.

To Manage Omaha District

MILWAUKEE—Appointment of J. S. Quinn as manager of the Omaha district office has been announced by Allis-Chalmers Industries Group. The Omaha district includes eastern, central and part of western Nebraska as well as a part of western Iowa.

R. A. Frazee, a representative in the St. Louis district since 1950, succeeds Mr. Quinn as manager of heavy industrial sales there.

Northern District Manager

NEW YORK—The appointment of William R. Harrison as northern district field sales manager for agricultural chemicals produced by Allied Chemicals' General Chemical Division has been announced by Thomas W. Collins, agricultural chemicals sales manager.

Mr. Harrison succeeds B. C. Macdonald who has been named supervisor of General's agricultural chemical development section with headquarters at the division's research laboratory in Morristown, N.J.

With the division nine years, Mr. Harrison will supervise sales in Minnesota, Montana, North Dakota, South Dakota and Wisconsin, with headquarters at General's Minneapolis sales office.

Elected to Board

LOS ANGELES—Earl H. Miller, resident manager of the U.S. Borax & Chemical Corp. plant in Carlsbad, N.M., has been elected to the board of governors of the western division of the American Mining Congress, it is announced by Julian Conover, executive vice president of AMC.

Mr. Miller, who joined U.S. Borax in Carlsbad in 1949 as assistant resident manager, was graduated from Washington State College School of Mines, and for 10 years was mine superintendent in the Metalline district for the Pend Oreille Mines & Metals Company.

Spencer Laboratory Manager Dies Suddenly

KANSAS CITY, MO.—Paul L. Sutton, 43, manager of Spencer Chemical Company's agricultural technical laboratory, died unexpectedly Oct. 10, at the Tulsa, Okla., airport. Death was attributed to a heart attack.

Mr. Sutton had been associated with Spencer's technical activities in the field of agricultural chemicals for more than 12 years. As technical laboratory manager, he made his headquarters at Spencer's Jayhawk Works, the location at which he first joined the company as a laboratory technician in 1948. He was a graduate of Pittsburg, Kansas, State College, where he received both a bachelor's and a master's degree in chemistry.

USDA VETERAN RETIRES — Herbert H. Walkden, left, entomologist with the U.S. Department of Agriculture, has retired after 40 years of service. For the last 20 years his research has been concentrated on the control of stored grain insects on the farm and in commercial storages. His last administrative position was in Manhattan, Kansas, where he headed the USDA Stored-Grain Insects Laboratory. Gailen D. White follows him in that position. On behalf of the secretary of agriculture, Dr. L. S. Henderson, above, chief of the Stored-Products Insects Branch, Washington, D.C., at ceremonies in Manhattan, Kansas, presented Mr. Walkden with the department's certificate of recognition and forty-year service pin.

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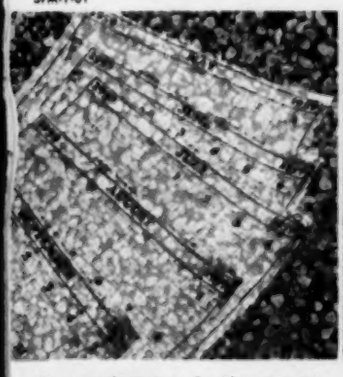

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You get more sales help from IMC's nationwide Sul-Po-Mag promotion. Powerful IMC advertising . . . hard-working promotion material to sell the Sul-Po-Mag story . . . plus personal attention from IMC men — all help to move more of your product.

Communist China's Current Economic Plan By-passes Fertilizer, Aids Heavy Industry

The chemical fertilizer industry of Communist China is getting much less attention than heavy industry in current economic planning, according to an article by Hughes H. Spurlock, Far East Analysis Branch, Foreign Agricultural Service.

This is surprising, Mr. Spurlock says, in view of the fact that China's agriculture bears an enormous burden. It is the key factor in the overall economic plan. It must not only meet the rapidly growing food and fiber needs arising from explosive population growth, but also supply industrial raw materials and pay for industrial development. The brightest single prospect for boosting farm production to meet these needs lies in chemical fertilizers.

Yet, after a decade of Communist rule, China's chemical fertilizer industry is still small relative to the need, and plant construction is lagging, Mr. Spurlock continues. Government policy has funnelled the bulk of capital investment into heavy industry and power development; the fertilizer industry has had only a small percentage of the money budgeted for economic development.

He feels the crucial question raised by this policy is: Can a weak and technologically backward agriculture meet such huge demands without heavy mineral fertilizer supplements to its traditional organic fertilizer sources—or will the policy lead to a dangerous food and fertilizer crisis?

Mr. Spurlock says the Communists have evidently based their fertilizer policy on the assumption that for the first few years of industrialization they can expand agriculture enough through several improved but inexpensive farm practices that use cheap labor and local materials. Then, gradually, they hope to bring chemical fertilizers into use in large quantities, as these labor-intensive farm measures near or reach practical limits, and as the country becomes industrially and technically capable of building fertilizer plants using its own resources. Already the Chinese Communists claim a trickle of reverse flow from industry into agriculture, for some fertilizer plants are now being built with parts and equipment made in China.

This whole "heavy industry first" procedure is consistent with standard Communist economic theory. It is also similar to the path that the Soviets followed. Only since 1950 has the Soviet Union made a strong push to step up production of chemical fertilizers. For China, however, with its paper-thin margin of agricultural supplies above minimum needs, such a course allows very little room for error. Neither success nor failure on the agricultural front is certain; but the rate of progress in supplying the necessary fertilizers is bound to be a factor of growing importance.

Production

China's fertilizer production targets and statistics do not show clearly the kinds of materials produced or the contents in percentage of nitrogen (N), phosphoric acid (P_2O_5), and potash (K_2O). But some useful observations are possible. Between 1952 and 1958, both consumption and domestic production of chemical fertilizers increased, but production as a percentage of consumption changed very little. China continued to spend scarce exchange on imports, which by the end of the period had reached 1.5 million metric tons. Chemical fertilizers are evidently being reserved largely for high priority uses, such as increasing the production of cotton and other technical crops in which the government has special interest.

Developments in the fertilizer industry so far suggest a policy of starting with the production of ammonium sulfate, ammonium nitrate, and ordinary superphosphate, and probably moving into the production of urea and the high-analysis metaphosphates as industrial capacity and technology improve. In 1958, reported domestic production included 900,000 tons of nitrogenous fertilizers, mostly ammonium sulfate (probably 20% N), and 344,000 tons of phosphoric fertilizers (probably about 18% P_2O_5). Except for some local areas, Chinese soils are not deficient in potassium, thus potash production is not being emphasized.

Communist China's Fertilizer Consumption and Supplies*

Year	Consumption 1,000 m.t.	Production 1,000 m.t.	Imports 1,000 m.t.	Ratio of production to consumption %
1952	433	194	239	44.8
1953	592	260	332	43.9
1954	900	345	555	38.3
1955	1,222	426	794	34.9
1956	1,500	663	837	44.2
1957	1,800	803	997	44.6
1958	2,700	1,244	1,464	45.9

*Includes a total of all mineral fertilizers in bulk form, i.e., the carriers.

Plant Construction

In 1949 the Chinese Communists came into possession of two modern, though badly damaged, chemical fertilizer plants, whose total production at that time amounted to less than 100,000 tons. The larger plant, built at Dairen under the Japanese occupation, had a prewar rated capacity of 200,000 tons of ammonium sulfate, but this capacity had been greatly reduced by the war and the Russians' removal of vital equipment after V-J Day. (Some of this old equipment may have been returned later as a part of the Soviet assistance programs.) The smaller plant, built at Nanking before or about the time of the Japanese attack in 1937, had a rated capacity of 50,000 tons of ammonium sulfate, but the highest annual output achieved before the Communists took over was reported to be 27,000 tons, or 54% of capacity.

Between 1949 and 1952, Mr. Spurlock said, the Chinese Communists concentrated on restoring these facilities, and claimed to have built the Dairen plant up to a rated capacity of 80,000 tons. (Reportedly it is scheduled for an ultimate capacity 10 times that size.) The Nanking plant was also rebuilt, and expanded to a rated capacity of 63,000 tons. About 75% of the nation's 1952 output is said to have come from these two plants.

In the same year, China launched its first five year plan, which called for expanding the two existing plants and putting five additional state-financed projects under construction. Of the new facilities, three were to manufacture nitrogenous fertilizers, and two of these were "Soviet Aid Projects." The other two new plants were to be built by the Chinese and to turn out phosphatic fertilizers. Work was not actually started until late in that period or early in the next, but by the end of 1958 all five of the new plants were reported to be in various stages of construction. Some, possibly all, of these installations are now producing at varying levels of capacity.

Policy Shift

For the second Plan period (1958-62), the state announced that it would continue work on the plants already started but would not begin any new projects to be financed out of national funds. The responsibility for financing and constructing new fertilizer facilities was shifted to local government units or peasant organizations.

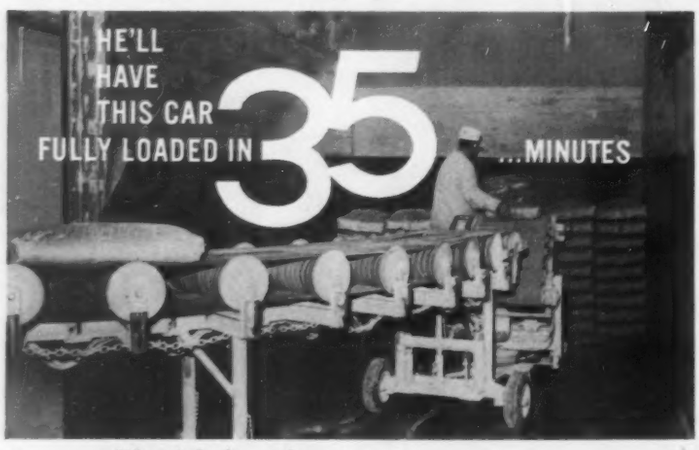
During the "big leap forward" drive of 1958, local construction plans mushroomed; all of the plants put under construction since 1958 were apparently started by local units.

This program, if carried to its ultimate conclusion—not a very likely possibility—would have each of some 2,000 counties operating a small fertilizer plant with a capacity of about 8,000 tons. Each administrative region or province would operate intermediate-size plants with capacities of around 40,000 tons or larger. It is not clear exactly how the communes fit into this plan at present, except that financing would probably come, in part at least, from savings set aside by peasant organizations.

This shift to local production is apparently designed for several purposes to utilize the nation's resources more fully, to depend on local funds as much as possible in expanding agriculture, and to cut down hauling distances by decentralizing fertilizer output. Shifting the financial burden, though not emphasized by the state as an advantage, is probably a major aim. But having fertilizer produced near its sources of raw material and power, and if possible near where it is to be used, is a highly attractive feature in a country where transportation has long been a difficult problem.

Transportation could be further eased when the industry moves into the production of high-analysis fertilizers such as the metaphosphates. But in the manufacture of equipment for producing these more complex fertilizers, China's industry has both technical and supply problems of the sort that usually beset an underdeveloped country attempting to move on several industrial fronts at one time.

The Chinese Communists have frequently complained at the cost of importing special plant equipment and have criticized the slow deliveries of these imports. To save foreign ex-



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'GROUNDED!'

SCOTT, MISS. — A Spearman biplane caused a freak ground accident here recently, knocking down the pilot Roy Russell, 38, who has been working for Delta & Pine Land Co. as an aerial applicator.

Delta Pine production manager Buell Nunnery, said Mr. Russell was cranking the plane from the outside with Pepper Martin of Scott operating the throttle controls. When the throttle stuck the plane went berserk knocking down Mr. Russell, chewing into a pickup truck which crashed into a Delta Pine owned auto.

The truck was badly damaged, the auto only slightly—and Mr. Russell was taken to Greenville General Hospital to be treated for severe bruises where he was reported in good condition.

Mr. Russell had been doing aerial application work for D&PL for several months, putting out cotton poisons, pasture fertilizer and cotton defoliants.

change and speed up construction, the Ministry of Machine Building has cut all possible corners trying to reach self-sufficiency in units for manufacturing the more complex fertilizers. Success is being claimed for these efforts. But critical shortages still exist in supplies of vital items, and substitutes are being sought. Building material shortages are especially serious for nitrogen production. In view of these drawbacks, production of urea and metaphosphates is evidently being attempted only on something of an experimental basis.

State Assistance

During the First Five Year Plan the capital investment going into fertilizer production came from the national budget and went into building and expanding the seven big fertilizer plants. During the Second Plan, emphasis on fertilizers has been increased, targets doubled, and proposed investments enlarged; but, as mentioned earlier, the increased allocations rely heavily on nonbudgetary sources. Though state authorities are clearly concerned over the lag in fertilizer production and are moving toward giving increased attention to the problem, they have not been willing to make major shifts of capital investment from higher priority uses.

However, to promote the manufacture of fertilizers from savings outside the state budget, the Central Government has extended some noteworthy services. Among these is the provision of guidance and blueprints to local organizations, to help them set up and operate fertilizer facilities that will suit their technical and financial resources. Reports are that the state has completed two small prototype plants for use as demonstrators, and that it is training engineers and skilled workers to assist local groups in building and operating their own plants.

Outlook

The Chinese once mentioned a target of 15 million tons of fertilizer by 1967; then in 1958, they moved the target date up to 1962. At another time, however, this same 15 million tons was officially described as far too little.

Under present conditions such targets and estimates of need have little practical significance. China's soils are known to be seriously deficient in one or more plant food elements, and the need for chemical fertilizers is so large that meeting it completely, or even in large part, is not a serious possibility for the next few years. It would be difficult enough—and about all the regime could hope for—to expand the fertilizer industry sufficiently to permit gradual yearly increases in fertilizer application. Whether this can or will be done remains to be seen. Success could greatly ease the agricultural problem; lack of substantial progress could greatly complicate the whole economic plan.

Concluding, Mr. Spurlock says China's progress along this line bears watching, for the state of its chemical fertilizer supply affords one of the best indicators of its general farm production trends. Use of this indicator in 1958 was highly effective in helping Free World observers to spot the enormous exaggerations in Communist China's official claims that farm production had doubled, long before China itself admitted them.

New Corporation

PHOENIX, ARIZ.—Sun-Ray Products, Inc., has filed articles of incorporation listing $500,000 authorized capitalization to "process, prepare, buy, sell, acquire either at wholesale or retail or both, distribute, export, import, dispose of, generally deal in and with chemicals and organic fertilizers, and all manners of insecticides, microorganisms, and by-products of any or all of the foregoing." Incorporators-directors are R. A. Peters, Phoenix; Herbert E. Welhener, Raymond J. Beran and Donald G. Pass of Scottsdale, Ariz.

Latest Rulings in Labor Relations

DOES TIME TAKEN FOR PHYSICAL EXAM CONSTITUTE SICK LEAVE ?

WE CAN'T PAY YOU FOR YESTERDAY, HOMER!
BUT I WAS GETTING A PHYSICAL EXAM!
I'M ENTITLED TO SICK LEAVE!
BUT YOU WEREN'T SICK!
I WENT FOR A DOCTOR'S CHECKUP!
HOMER ADMITS HE WASN'T SICK!
ARBITRATOR'S DECISION
NO, SICK LEAVE PAY IS ONLY FOR EMPLOYEE ILL AND UNABLE TO WORK.
Based on a 1959 Virginia decision

CONFERENCE

(Continued from page 32)

waiting for the beaten path to develop.

"If the price that farmers pay for fertilizer was raised $8 per ton, farmers would make considerably more money. Here's why: If a fertilizer dealer had a margin of $10 ton on his fertilizer sales, instead of $1 or $2 a ton, don't you think he would beat the bushes, do more field selling, and rant and rave to get his farmer customers to use more adequate—more profitable—rates of fertilizer? And for the farmer who is not using the most profitable rates of fertilizer, his increased return would still be several hundred percent on his investment in fertilizer."

Dr. Parks then suggested the county agent as another source to help carry out the industry's responsibilities.

"Let me make the same analogy here, applying the profit motive to the functions of the county agent," he said. "Suppose we could develop a system whereby the more money the farmers in a county make, the more money the county agent makes. More or less, an incentive bonus system. Suppose in addition to his salary, the county agent receives a bonus. The bigger the increase in farm income in his county, the bigger the bonus. Maybe the bonus could be substantial enough that the county agent would rant and rave, too, to get the farmers in his county to use optimum amounts of the right fertilizers. Don't you think that under such a system, we would move in the direction of making the future of agriculture a more profitable one?

"I hope I have conveyed my belief that it is the opportunity, the duty, and the responsibility of the fertilizer industry to sell more adequate amounts of the fertilizers that are needed.

"Additionally, the fertilizer industry has a responsibility to the research and extension agencies whose results and efforts are needed, to make the farmer's use of fertilizer most profitable.

"At this point, I would like to cast a questioning eye on our associates in experiment station and extension work. Why is it that there is not better support for their programs, from the fertilizer industry? It's not because of lack of a good story, because there is a good story—the same one I've just been touting so highly. Then if we believe in the program—and we do—why isn't the fertilizer industry present en masse when the state legislature considers annual appropriations for extension work? Is it possible that the extension and experiment station people have been guilty—and the fertilizer industry—of knowing that we have a good product and wondering why the path to our door isn't just a little better trodden?

"I am not saying that this problem has not been recognized, because it has. The extension people have made a modest dignified effort to educate us, but they haven't sold us. In the diverse clamor of America today, such a modest approach won't sell a fountain pen, or an automobile, or a carload of fertilizer—or a research program.

"To those in college and experiment station work, I would offer counsel identical to my advice to the fertilizer industry: If you have a good product, and you believe in it, it is your responsibility to the future of agriculture to get out and sell it!"

Monsanto Acquires Surplus Plant

ST. LOUIS — Monsanto Chemical Co. has acquired title to the old St. Louis Chemical Corp. plant adjacent to Monsanto's William G. Krummrich plant in Monsanto, Ill.

The acquisition involves production facilities and a 15.7-acre tract of land. During World War II, the Chemical Corp. plant was operated for the Army by Monsanto to produce specialized medicinals. Monsanto has been leasing the facility from the government to manufacture farm chemicals and oil additives.

Gordon B. Ough Dies

BLENHEIM, ONT. — Gordon B. Ough, 21-year veteran with the Canadian Industries Ltd., died at his home here recently.

He was manager of the C.I.L. plant in Chatham and assistant Canadian manager of the Agricultural Chemicals Ltd., Toronto, since 1959.

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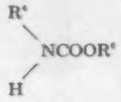
PRODUCTION PROCESS PATENTS

2,954,286

Phosphate-containing Complex Fertilizer Material Production. Patent issued Sept. 27, 1960, to John Kenneth Bradley, Ipswich; Geoffrey George Brown, Woodbridge, and William Francis Sheldrick, Felixstowe, England, assignors to Fisons, Ltd., Suffolk, England. A process for the production of a complex fertilizer which comprises reacting together potassium chloride and nitric acid of a concentration in the range 50-95% by weight, at a temperature of the order of 100° C., the nitric acid being employed in amount comprising 10 to 200% excess over the requirement of 4 mols of nitric acid per 3 mols of potassium chloride, removing the formed nitrosyl chloride and chlorine, treating the liquid product free from nitrosyl chloride and chlorine with phosphoric acid of a concentration in the range 50-70% by weight, and treating the resulting product with ammonia, with vigorous agitation.

2,955,069

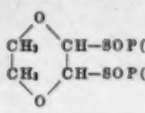
Synergistic Insecticidal Compositions. Patent issued Oct. 4, 1960, to Howard A. Jones and John A. Garman, Baltimore, Md., and Berton C. Dickinson, Lyndonville, N.Y., assignors to Food Machinery & Chemical Corp., New York. Synergistic insecticidal compositions comprising O, O-dimethyl S-(1,2 dicarbethoxyethyl) dithiophosphate and an organic carbamate ester of the following general formula



wherein R^1 is ethyl and R^2 is selected from the group consisting of 3-methylphenyl, 4-methylphenyl and 3-5-dimethylphenyl, wherein said components are present in the ratio of about 2 parts of said carbamate per part of said dithiophosphate.

2,955,116

Organic Thiophosphates as Insecticides. Patent issued Oct. 4, 1960, to William R. Diveley, Newark, Del., assignor to Hercules Powder Co., Wilmington, Del. The method of producing a compound of the formula



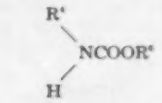
in which R represents a saturated hydrocarbon radical of 1-4 carbon atoms which comprises contacting a compound of the formula $(RO)_2POSOP(OR)_2$ with dioxene in the presence of a catalytic amount of iodine at a temperature in the range of about 0-100° C.

2,955,125

Herbicidal Compositions. Patent issued Oct. 4, 1960, to Carl N. Andersen, Briarcliff Manor, N.Y., assignor to Gallowhur Chemical Corp., Ossining, N.Y. A compound selected from the group consisting of an arsono acetaldehyde having 1 to 3 arsono groups linked to its alpha carbon atom, and the alkali and alkaline earth salts thereof.

2,955,070

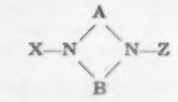
Synergistic Insecticidal Compositions. Patent issued to Howard A. Jones and John A. Garman, Baltimore, Md., and Berton C. Dickinson, Lyndonville, N.Y., assignors to Food Machinery & Chemical Corp., New York. Synergistic insecticidal compositions comprising O,O-dimethyl S-(1, 2 - dicarbethoxyethyl) dithiophosphate and an organic carbamate of the formula



where R^1 is ethyl and R^2 is selected from the group consisting of 4-methoxyphenyl and 4-phenylphenyl radicals, and wherein said components are present in the ratio of about two parts of said carbamate per part of said dithiophosphate.

2,955,071

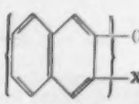
Insecticidal Composition Comprising an Acylated Piperazine and a Member of Group of Pyrethrin and Allethrin. Patent issued Oct. 4, 1960, to Joseph J. McGrath, Pittsburgh, Pa., assignor to Gulf Research & Development Co., Pittsburgh. An insecticidal composition comprising an insecticidal toxicant selected from the group consisting of pyrethrins and allethrin, a solvent therefor, and an acylated piperazine having the following formula:



wherein A and B are selected from the class consisting of unsubstituted ethylene radicals and ethylene radicals having from 1 to 4 short chain alkyl substituents of not more than two carbon atoms each, X and Z are acyl radicals of aliphatic carboxylic acids containing from 3 to 15 carbon atoms.

2,955,072

Chloronitronaphthalenes as Fungicides. Patent issued Oct. 4, 1960, to Rex D. Closson, Northville, Mich., and Walter T. Smith, Jr., Lexington, Ky., assignors by mesne assignments, to Pittsburgh Coke & Chemical Co. A fungicidal composition comprising a halonitronaphthalene of the formula



wherein n is one of the integers 1 and 2, m is one of the integers 1 and 2, the total of n and m is not over three

Feeds 1-ton-per-minute bagging machine from stockpiles up to 50 feet distant, also unloads box cars at 100 tons per hour with 15 feet haul to elevator.

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"The H-25 is easier to operate; has shorter turning radius and gives nearly twice as much output as our older tractor-shovels," says James C. Harnage, Plant Superintendent of Berrien Products Co., Nashville, Georgia. "It also spills less, keeps the floor cleaner, and maintains better working safety conditions. Digging traction is good and the lift is fast. It's proving to be the most efficient mover we ever used and is even outperforming larger movers".

Feeding 5-10-15 fertilizer from the stockpile on a 50 ft. haul, this H-25 is able to keep up with the full 1-ton-per-minute capacity of the bagging machine. The power-steer and power-shift transmission of the H-25 gives such ease of operation that an operator can maintain a fast, high-production pace the full shift without strain.

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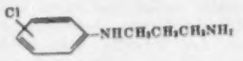
and X is a halogen of atomic number 17-35, together with a surface active agent as a dispersant therefor.

2,952,585

Immunizing Against and Treatment of Diseases. Patent issued Sept. 13, 1960, to John H. Heller, Wilton, Conn., assignor to New England Institute for Medical Research, Ridgefield, Conn. As a composition of matter, colloidal carbon black having adsorbed thereon an agent selected from the group consisting of toxoids, antigens, anti-allergic agents, hormones, natural and synthetic, and therapeutics.

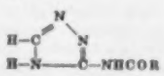
2,953,490

Propylamine Fungicides. Patent issued Sept. 20, 1960, to George F. Deebel, Dayton, Ohio, assignor to Monsanto Chemical Co., St. Louis, Mo. The method of inhibiting growth of fungi which comprises exposing the fungi to a toxic quantity of an amine of the formula



2,953,491

Fungicide. Patent issued Sept. 20, 1960, to William B. Hardy, and John F. Hosler, Bound Brook, N.J., assignors to American Cyanamid Co., New York. The method of protecting organic materials susceptible to damage by fungi which comprises: applying to said organic material a biocidal composition comprising an inert carrier and from at least 0.01 to 10.0% by weight, based on the total weight of said biocidal composition of a 3-acylamino-1,2,4-triazole characterized by the formula:



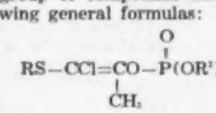
wherein R is a substituent selected from the group consisting of an alkyl radical of at least eight but not more than twelve carbon atoms and an aryl radical.

2,953,492

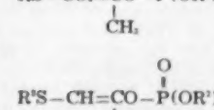
Method of Controlling Nematodes by Applying Imidazole. Patent issued Sept. 20, 1960, to William E. Duggins, Berkeley Heights, N.J., assignor to General Aniline & Film Corp., New York. The method of protecting loci against nematodes which comprises applying to said loci a nematocidal amount of imidazole.

2,954,316

Vinyl Phosphate Pesticides. Patent issued Sept. 27, 1960, to Everett E. Gilbert, Morris Township, Morris County; Julian A. Otto, Lake Tamarack, and Edmund J. Ramanowski, Jersey City, N.J., assignors to Allied Chemical Corp., New York. A vinyl phosphate compound selected from the group of compounds having the following general formulas:

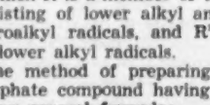


and

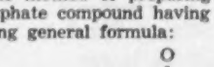


in which R is a member of the group consisting of lower alkyl and monochloroalkyl radicals, and R^2 and R^3 are lower alkyl radicals.

The method of preparing a vinyl phosphate compound having the following general formula:

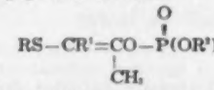


in which R is a member of the group consisting of lower alkyl and monochloroalkyl radicals, R^1 is a member of the group consisting of hydrogen and chlorine, and R^2 is a lower alkyl radical, which comprises reacting an alkylmercaptoacetone having the following general formula:

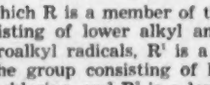


in which R^2 is a lower alkyl radical, with a chlorinating agent, thereby forming a chlorinated mercaptoacetone compound, and then reacting said chlorinated mercaptoacetone compound with a lower trialkyl phosphite.

Pesticidal compositions comprising a vinyl phosphate compound selected from the group of compounds having the following general formulas:



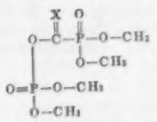
and



in which R is a member of the group consisting of lower alkyl and monochloroalkyl radicals, and R^2 and R^3 are lower alkyl radicals, together with a carrier therefor.

2,954,317

Methods and Composition for Control of Parasites. Patent issued Sept. 27, 1960, to Eugene E. Kenaga, Midland, Mich., assignor to the Dow Chemical Co., Midland. A method which comprises bringing into contact with pests selected from the group consisting of insects and arachnids, a parasiticidal amount of a toxicant corresponding to the formula



wherein X is a member selected from the group consisting of an alkylidene and a chloralkylidene radical containing from the group consisting of an alkylidene and a chloroalkylidene radical containing from 1 to 2 carbon atoms, inclusive.

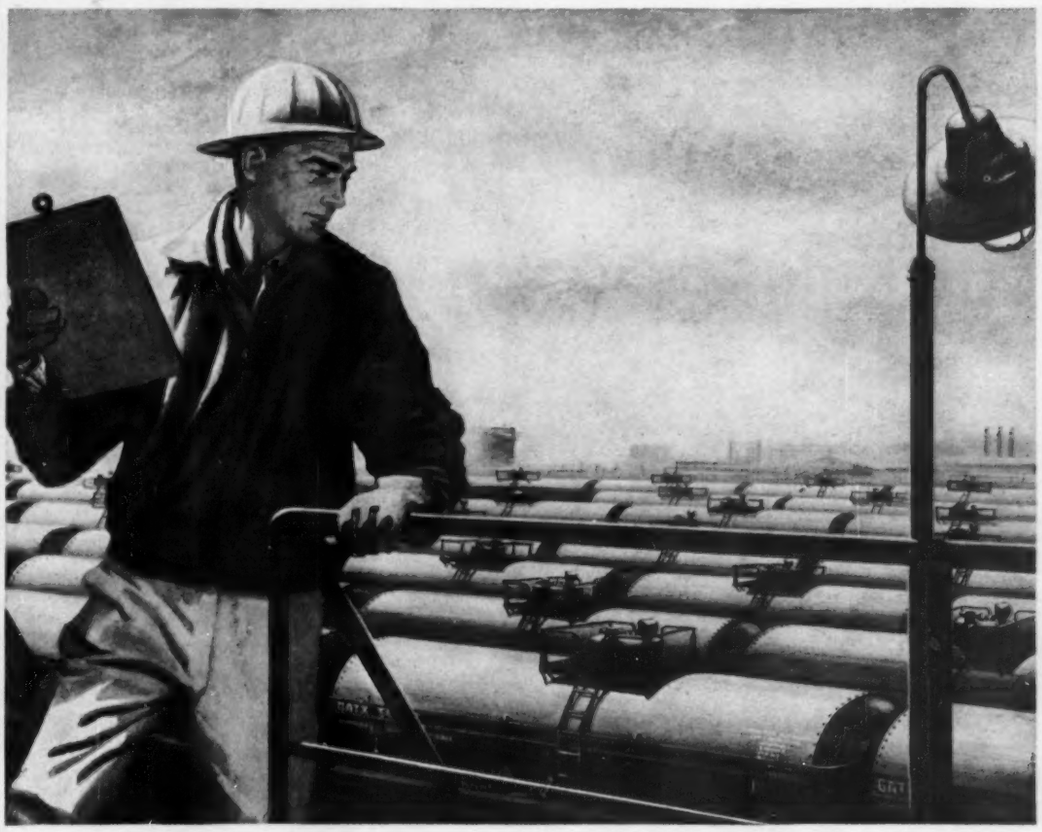
2,954,318

Miticide Composition. Patent issued Sept. 27, 1960, to George F. Ludvik, Kirkwood, Mo., assignor to Monsanto Chemical Co., St. Louis, Mo. A composition for controlling insects and mites which comprises as its active ingredients a mixture of from 2 to 60% of 2,4,5,4'-tetra-chlorodiphenylsulfone and from 40 to 95% of the ethyl ester of O(p-nitrophenyl) thiophosphoric acid.

2,954,319

Method of Combating Red Spider Mites by Means of a Trichloro-diphenyl-sulphone. Patent issued Sept. 27, 1960, to Jan Hendrik-Uhlenbroek and Jacques Meltzer, Van Houtenlaan, Netherlands, assignors to North American Philips Co., Inc., New York. A method of destroying red spider mites particularly in their develop-

(Turn to **PATENTS**, page 42)



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ST. LOUIS, MO.—*4251 Lindell Blvd.*
TAMPA, FLA.—*3737 Neptune St.*
TULSA, OKLA.—*1708 Utica Square*
WICHITA, KAN.—*501 KFH Building*

SULFURIC ACID LINE

(Continued from page 9)

that there will be an accident. This means that emergency treatment facilities will be put in the area where aid can be administered promptly.

In a recent magazine article, Warner Bloomberg, Jr., made this statement, "The careless fool who ignores all safety rules may live to retire with no injury worse than a cut finger, while a man known for his caution may be struck down." This pretty well describes this foe—Accidents, that we are trying to destroy. Remember what he is and it will help us in the fight.

GIRDLER CHANGES NAME

LOUISVILLE, KY.—Girdler Construction Corp. of Louisville recently announced a change in its corporate name to Girdler Corp.

TVA Symposium On Fertilizer Planned

MUSCLE SHOALS, ALA. — TVA and the Southern Regional Soil Research Committee (Fertilizer Evaluation Work Group) will jointly sponsor a symposium on "Effects of Environment on Crop Response to Fertilizers" at Muscle Shoals, Ala., on Jan. 25-26. This symposium will be held in connection with the annual fertilizer evaluation conference sponsored by these groups and will occupy the morning sessions on both days. The first session will be concerned with moisture-yield response relationships. The second morning session will include topics concerning temperature effects on nutrient uptake. Arrangements are being made for outstanding speakers for various papers to be presented in the symposium.

Afternoon sessions will be devoted to progress reports of cooperative research, concerning only the sponsoring groups and cooperat'ng states. Tours of TVA's research and production facilities will be available for all in attendance.

Engineer Group Announces December Meeting Plans

MEMPHIS, TENN. — Some 1,200 agricultural engineers from industry, educational institutions, and state and federal agencies will gather here Dec. 4-7 for their winter meeting.

The group will require the meeting facilities of both the Peabody and Chisca Hotels for its program. Th's will be the first time the society has held its winter meeting in Memphis.

Total number of speakers participating in five concurrent sessions will total more than 150.

WASHINGTON MEETING

SPOKANE, WASH. — Annual Washington Liquid Fertilizer Dealers Assn. meeting has been scheduled for Dec. 5, at the Davenport Hotel here.

'FIGHT EXAGGERATIONS'

SACRAMENTO, CAL. — California's dean of agriculture has urged the farming industry to fight "unfounded or exaggerated stories" about the presence of chemicals on food with the weapon of fact.

Dr. Daniel G. Aldrich, Jr., told the Governor's special committee on public policy regarding agricultural chemicals that "it is our duty to show the public that the use of chemicals in food production, preservation and storage is carefully regulated by laws that are strictly enforced by governmental agencies and that farmers recognize a moral responsibility to use these chemicals properly."

Dean Aldrich said that if Americans wish to keep on eating in the manner to which they have become accustomed, they have no choice but to accept the control of pests with chemicals.

"Without these pesticides," he said, "we would not have our present supply of foods and those that would be available would cost much more."

He added that chemicals in many cases are directly responsible, not only for more food, but for cleaner food of higher quality.

Sulfur Safety Covered In MCA Booklet

WASHINGTON—A chemical safety data sheet on sulfur has been published recently by the Manufacturing Chemists' Assn. The 15-page booklet gives step-by-step instructions for unloading molten sulfur from tank cars. It covers "dome" unloading by air pressure and "bottom" unloading by gravity flow, pump or air pressure.

Other sections of the booklet cover the physical properties of sulfur, engineering control, employee safety, protective equipment, fire fighting, handling, storage, tank cleaning, medical management and first aid.

Approximately five and one-half million tons of sulfur are used annually in the United States in the manufacture of fertilizers, explosives, insecticides, fungicides, pharmaceuticals and many other chemical products.

MCA's publication on sulfur is the 74th in the continuing chemical safety data sheet series. Copies may be obtained at 30¢ each from the Manufacturing Chemists' Assn., Inc., 1825 Connecticut Avenue, N.W., Washington 9, D.C.

California Chemical Workers' Earnings Increase

SAN FRANCISCO — The Labor Statistics and Research Division of the California Department of Industrial Relations reports that average weekly earnings of agricultural chemical production workers in the state increased between July and August.

Agricultural chemical workers were earning an average of $104.23 in August, compared to $101.11 the month before, and $97.27 in the same month of 1959. The average hourly wage went up one cent, to $2.47. It was $2.39 in August, 1959.

The $104.23 average weekly earnings of agricultural chemical workers compared to $111.34 in the chemical industry as a whole in the state. The Division reported that there were 39,600 workers in the entire industry in August, 100 more than in July and 500 more than in August, 1959.

New Mixing Plant to Be Built in Iowa

CONRAD, IOWA—Alexander Enterprises has started construction of a $20,000 remote controlled, dry fertilizer mixing plant here.

With special metering equipment, one man will be able to prepare any analysis of fertilizer ordered by the farmer and in any quantity desired, the owners say.

Familiar face in Midwest fertilizer plants: U.S.I.'s Field Service Engineer Tom Martin checks granulation of product at Federal Fertilizer Co. plant in Danville, Ill.

Here's U.S.I.'s Tom Martin . . .

LOOKING FOR WORK IN YOUR PLANT

Tom Martin is U.S.I.'s Senior Field Service Engineer covering fertilizer manufacturers in the Midwest. His job: To help customers make the most efficient use of U.S.I.'s Ammonia, Nitrogen Solutions, Sulfuric Acid and Phosphatic Fertilizer Solutions (wet process phosphoric acid).

Tom knows materials, processes, equipment, formulations, costs. He'd like to put his knowledge and experience to work in your plant.

Why not get in touch with him? He's available for trouble shooting on any immediate production problem you may have. Tom will also help you calculate optimum formulations . . . suggest equipment . . . determine whether — and how — you can cut costs. He'll work with you setting up trial runs, and lend a hand until production is running smoothly.

If this U.S.I. service would be valuable in your operations, you can contact Tom Martin through our New York Sales Office. Write or phone collect. The number is OXford 7-0700.

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"You're beautiful because your colors are bright —and you're so loaded with that certain perfection Chase always gives!" "That certain perfection" is really a host of little details that Chase never overlooks. For instance, every Chase plant employs an "Ink Man," just to keep constant watch over hundreds of different hues, and to help Chase's skilled color-printing craftsmen put them to the very best use. All this so your products go to market in the most inviting way possible! As for *economy* and *utility*...these are an integral part of every Chase Bag. For facts about bags for any purpose, call your Chase Man, or write us.

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PATENTS

(Continued from page 39)

mental stages comprising contacting said mites with an acaracidal composition containing an acaracidally effective amount of 2,4,4'-trichloro diphenyl sulfone and an inert carrier therefor.

2,954,320

Vinyl Phosphate Pesticides. Patent issued Sept. 27, 1960, to Everett E. Gilbert, Morristown; Alphonso W. Marsilio, Boonton, and Julian A. Otto, Stockholm, N.J., assignors to Allied Chemical Corp., New York. A vinyl phosphate compound having the following general formula:

$$RS-CR^1=CO-P(OR^2)_2$$
$$\quad\quad\quad

Education the Answer . . .

Pesticide Industry Problems Not Erased by Legislation

By LEA S. HITCHNER*
Executive Secretary
National Agricultural Chemicals Assn.

OVER the past several years, many criticisms of the safety of American food products have been heard. These criticisms have been made by a relatively small number of people. They have been largely in the form of unsubstantiated charges, questions loaded with innuendo and half-truths. They have been repeated in many guises by different individuals and groups for different reasons.

These criticisms have misled some consumers in the U.S. and in Europe to question the wholesomeness of American food products. These vague and unsubstantiated accusations have aroused suspicion and fear of products raised by farmers in California and in our other farm states, despite the fact that these products have been raised according to the best and safest farm practices known to man.

Your leading agriculturists in California are aware of this situation and the problems it creates for California farmers, food processors and distributors.

Certainly, we do not contest the right of any group to promote their own beliefs in a positive way. But we do question the propriety of their attempts to excite public fear of safe, chemically grown foods in order to expand the number of their followers.

What concerns our industry today —and what concerns everyone sincerely interested in the prosperity of American agriculture and the health of the American people is this: Repetition of unsubstantiated accusations about the use of chemicals in food production is arousing public fear of American food products throughout the world, and is, perhaps, to some degree, undermining world confidence in the U.S. itself.

That is our view of the current situation. As for our industry, we share with the land-grant colleges and universities, and with all reputable research institutions a responsibility to back our statements with the proven results of reliable research. We have legal and financial as well as moral responsibilities to this end. Many of our critics have no such responsibilities.

Opportunity to Present Facts Welcomed

For our part, we always welcome an opportunity to put all the facts on the table. We will be glad to supplement remarks on legislation, administration of the laws, and industry activities with any detailed information available to us which you might need during your deliberations.

For example, Dr. Mitchell R. Zavon, assistant professor of industrial medicine, Kettering Laboratory, college of medicine, University of Cincinnati, who is chairman of our toxicology committee, will be glad to consult with any of your committee members on matters of toxicology.

Dr. L. E. Curtis, medical director, Standard Oil of California, is a member of our medical committee, and will be glad to discuss subject matter of interest to the medical profession.

Members of our NAC Regulatory Advisory Committee have been working with the Food & Drug Administration and the U.S. Department of Agriculture on administrative and technical problems relative to the Miller Pesticide Residue Amendment and the Federal Insecticide, Fungicide, and Rodenticide Act. They are available for any detailed information which they may contribute to your committee.

Legislation

The manufacture, sale and use of pesticides in food production, as you know, are controlled by federal laws and by many state laws. These were formulated after exhaustive legislative investigations.

The Federal Insecticide, Fungicide, and Rodenticide Act, administered by the U.S. Department of Agriculture, and the Miller Pesticide Residue Amendment to the Food, Drug, and Cosmetic Act, administered by the USDA and the federal FDA, today provide regulation of industry products and of foods moving in interstate commerce.

Similar state laws in states, such as the laws administered by Allen Lemmon and Robert Rollins in California, assure the safety of farm products moving in intrastate commerce. A uniform legislative pattern based upon the two federal acts has been and is vigorously supported by our industry.

The present situation is not one, we believe, which can be solved by additional legislation. The present legislation, when properly administered and enforced, is adequate to assure the proper use of agricultural chemicals and to assure safety to the user and to the consumer. Many medical men, nutritionists and other scientists familiar with the use of agricultural chemicals in food production agree with this position.

We are naturally concerned about the possibility of restrictive legislation which would discourage research and development of new materials by private industry. This could jeop-

(Turn to PESTICIDE, page 46)

*Presented before Gov. Brown's special committee on public policy regarding agricultural chemicals, Los Angeles, Sept. 14, 1960.

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Third Oriental Fly Found in California

SACRAMENTO—Positive identification of a third Oriental fruit fly caused California state and county agricultural authorities to further intensify the already expanded trapping program launched in Orange County only six weeks ago.

The third fly was found on a routine inspection of a trap located in Carpenteria, Santa Barbara County. Insect detection traps are located throughout the state as a part of a continuing state-wide pest detection program.

Significant is the fact that while the first two flies were found in traps placed in citrus trees, the third fly was taken in a trap hanging in an avocado tree adjacent to an oil tank farm and serves to emphasize the important fact that the Oriental fruit fly is not a d'scriminatory pest. It is known to attack and damage more than 100 varieties of fruits and vegetables.

The fly, a female, was in good condition when found and was positively identified by California Department of Agriculture entomologists in Sacramento. A subsequent examination by University of California experts at Berkeley showed the fly to be young and probably immature.

Cyril Gammon, economic entomologist in the California Department of Agriculture, has been officially appointed to be the department's coordinator between state and county officials in an all-out effort to locate and determine the extent of the Oriental fruit fly situation in Southern California.

Plans Announced For Plant Construction

DELTA, COLO. — Frank Doran, general manager of Sun-Gro Minerals, Inc., has announced plans for construction of a $100,000 plant to manufacture soil additives, employing some 50 persons.

Actual construction was scheduled to begin about Oct. 20 at Dodge and Fourth Sts. here. The new firm hopes to begin production within two months.

The new company recently was incorporated in Colorado with an authorized capitalization of $750,000.

The powder additive, to be used in farming, will be produced from iron oxide and decomposed sulphur which are found in extensive open-pit mines about 10 miles east of here, Mr. Doran explained.

Here are the profit-producing benefits of PANASOL Aromatic Solvents: (1) High solvency. PANASOL Solvents blend readily and easily with active ingredients. (2) Safety from crop damage. They let you formulate with the assurance you're using quality solvents that have been field tested on corn, cotton, tobacco and a variety of vegetable crops. (3) Fast delivery and sure service. Your solvent is there when you need it to help you move your inventory and make a profit. (4) Skilled technical service from experienced solvent specialists is at your call.

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Quick facts about **PANASOL Solvents**

PANASOL RX-4. For formulations where low phytotoxicity is important. Excellent substitute for xylene. Very high K-B value and aromatic content. Particularly suited for corn and tobacco pesticide formulations.

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The 4 benefits you get with PANASOL Solvents mean more pesticide profits

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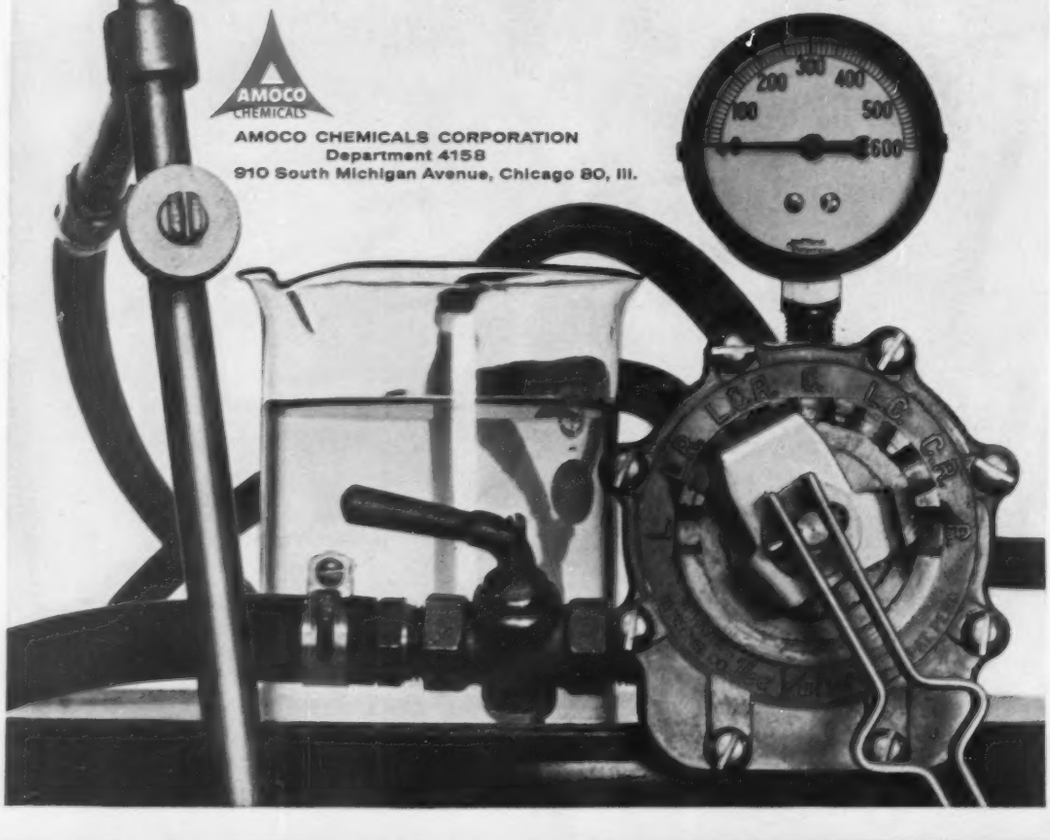

PRODUCTION Man of the Month

HEAVY RESPONSIBILITY in overseeing production of granular fertilizers in four plants is carried by Thomas J. Hoshall, vice president and general manager of Farm Fertilizers, Inc., Omaha, Neb. Mr. Hoshall's area of work is broad, since he has supervision over production not only at the parent plant in

Thomas J. Hoshall

Omaha where he makes his headquarters, but also at the company's plants acquired some months ago at Fremont, Neb., and Webster City, Iowa, as well as at the Bennett Chemical Co., Denver, Colo. The latter plant specializes in products containing secondary and trace elements for fertilizer use. These are put out in granular form and can also be manufactured in both complex and non-complex form.

Granular fertilizers are the order of the day in all plants. In fact, Farm Fertilizers, Inc., is a pioneer in granulation in the Midwest, having manufactured only this type of plant food since 1949.

Tom Hoshall supervises the manufacture of superphosphate used in the company's own processing and also for supplying to other manufacturers. A continuous ammoniation system is used, along with pre-neutralization. The pre-neutralization system has been used for three years, which marks the company as being somewhat of a pioneer in this category, also.

Production at the plants supervised by Mr. Hoshall includes high-analysis, chemically-combined fertilizers running from 20-10-5 on down. The plants make full use of anhydrous ammonia as a source of nitrogen in many grades.

Tom is a graduate of the University of Maryland, receiving a degree in agriculture with the class of 1936. He joined the Davison Chemical Co. that year and remained with that firm until 1950. During his years with Davison, he gained broad experience at plants at New Albany, Ind., and at Perry, Iowa. He was manager of the latter plant from 1946 to 1950.

The only break in his continuous service in the fertilizer industry came during the years of World War II when he was a member of the armed forces.

Croplife Want Ads... Get Results

Conference Speakers Stress Import of Particle Size in Granular Pesticides

By LAWRENCE A. LONG
Editor of Croplife

OWATONNA, MINN.—Representatives of some 19 basic manufacturing firms in the pesticide field were among the 50 guests invited to participate in the third annual Gandy Granular Chemical Conference here Oct. 18. The event, sponsored by the Gandy Company and its president, E. S. Gandrud, featured talks by pesticide experts from Iowa State University and Michigan State University, and a panel discussion by representatives of three pesticidal clay suppliers.

Speakers at the conference emphasized the need for standards in the granular pesticide field, particularly uniformity in granule size in order to assure accurate distribution when application is made.

Dr. Gordon Guyer, Michigan State University, East Lansing, reported on pesticidal work being done in Michigan in field crops and other plantings. In corn, he said, the rootworm is likely to cause more trouble because of current planting practices of corn following corn without rotation. Granular pesticides, he said, are thus far able to control this pest since resistance is not yet a factor.

Systemics, he said, are likely to find an important place in the control of corn leaf aphid. Granular residues are not a serious problem in this application, he said. The Michigan professor reported other areas, also, where systemics show unusual promise in the control of various insect pests including Hessian fly, grasshoppers, and aphids.

Dr. T. A. Brindley, U.S. Department of Agriculture, Iowa State University, Ames, Iowa, discussed the use of granular insecticides for control of European corn borer, saying that most materials are in the 20-40 mesh size range, and that the best toxicants for control of this pest so far include DDT, Heptachlor, Toxaphene and Endrin.

He said that the spectre of illegal residues on crops is a serious hindrance in the minds of some farmers, but if the users will only read what is on the label, there should be no difficulty. Too many farmers, he declared, pay little attention to label instructions through which manufacturers hope to reach the user.

Application rates could be less than is actually used in many cases, Dr. Brindley pointed out. The rate of 20 lb. an acre appears to be a safe recommendation, although less could be used effectively. "But with some of these jockeys wheeling the equipment through the fields, it is just as well to let them use the 20-lb. rate," he observed.

Prof. Walter Lovely, U.S. Department of Agriculture, Iowa State University, Ames, discussed further the granular field, showing color slides of results with herbicides and insecticides in various crops.

He emphasized the importance of both proper formulation and accurate application for good results.

A panel discussion on particle sizes of granular clays was conducted with Charles Starker, Gandy Co., as moderator. Participating in the panel were Kenneth K. Krausche, Floridin Co., Tallahassee, Fla.; Joseph Meehan, Minerals & Chemicals Philipp Co., Menlo Park, N.J.; and John Norton, Star Enterprises, Cassopolis, Mich.

The speakers told the audience about the properties of their respective products, explaining the different sizes of granules and their functions. They pointed out the need for standardization to improve uniformity of product, assured their listeners that there is an ample supply of clays for the pesticide trade, and answered a number of questions from the floor.

It was pointed out that more than 50% of the final pesticidal product is in the basic carrier, and that these inert particles can make the difference between an excellent formulation and a mediocre one.

The discussion covered the importance of particle size; the proportion of fines in the lot; the importance of the number of particles per pound; and how some manufacturing and storage procedures tend to break down particle size.

Mr. Krausche said that too many fines greatly increase the number of particles to the pound, which makes a difference in the final product. There are a number of practices which tend to create more fines. Among these are bulk handling, and storage where the heavy weight of stacks of products crush the particles at the bottom.

Mr. Meehan explained that there is frequently an area of misunderstanding in the pesticide trade concerning terminology of mesh size, fines, and size breakdown. He said that operating on a "drugstore" basis brings up problems since quick or frequent changes in specifications create production difficulties.

Mr. Norton, last of the three panelists to appear, pointed out that his company's product is not an attapulgite, but rather a montmorillonite mined in southern Illinois. He said that this type of clay is available in either extruded or non-extruded types for different types of formulation.

The progress of granular pesticidal products during the current year was pointed out by Mr. Starker. His talk indicated that the area using this type of materials for control of soil insects and corn borer has spread from Nebraska to the East Coast. Only last year, he said, the eastern edge of use did not go much beyond Illinois. It was also shown by means of a large U.S. map, that areas in Florida, the Pacific Northwest, Arizona, and agricultural areas of California are also making use of granular products at the present time.

Other Gandy personnel participating in the day's meeting included Milton Edwards who reported on granular progress in the South; Mike Chavez, in the Northeast; and Harry Colbin, on the firm's distribution pattern.

Eugene F. Schneider, vice president, International Harvester Co., Chicago, spoke briefly to the group on his company's views of the granular chemical program, and John Gould, Minneapolis, discussed patent procedures as related to application equipment and manufacturing procedures.

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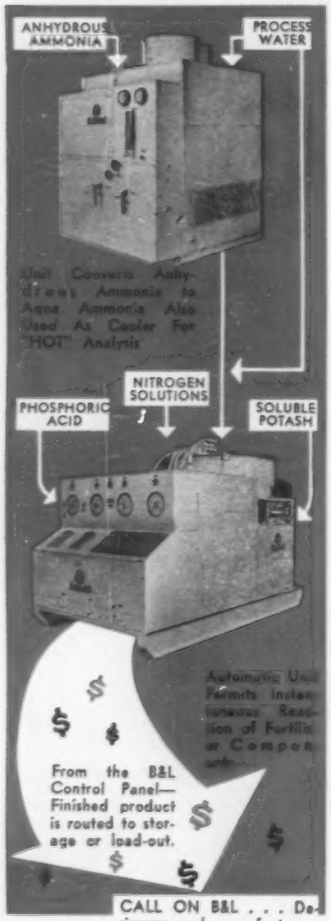
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PESTICIDE

(Continued from page 43)

ardize adequate pest control in agriculture without increasing the protection of consumers. Threats of restrictive legislation already are causing some of our member companies to curtail their agricultural pesticide research programs. As Dr. Charles E. Palm, dean of the college of agriculture, Cornell University, has pointed out, without a constant supply of new materials to protect crops against new diseases and insects and against resistant insects, we could arrive at a situation where many food crops could not be produced.

Assuming that we do have good laws, the next question is how well are they being administered? Administration is the key to the effectiveness of any law.

Since the original federal insecticide act was passed in 1910, great progress has been made on federal and state levels in effective administration of laws to protect farmers and consumers. Granting all the progress that has been made, it is the industry's views that administration is an area where significant new progress can be made now and in the future.

In 1947 the current Federal Insecticide, Fungicide and Rodenticide Act was passed to encompass modern scientific developments. And this act was amended in 1959. Through the efforts of the federal government and the Association of American Pesticide Control Officials, a sound, uniform program of control has been developed under this law and similar state laws. Much credit should be given to those in California and throughout the nation who administer these laws in the public interest.

On July 22, 1954, the Miller Pesticide Residue Amendment to the Federal Food, Drug and Cosmetic Act was signed by Pres. Eisenhower. This law was introduced by a former congressman, A. L. Miller, a medical doctor and former director of public health in Nebraska, and was fully supported by our industry. Since that time, more than 2,000 tolerances or exemptions from a tolerance have been established under this law for safe pesticide residues in or on foods. Many hundreds of thousands of dollars and many thousands of man-work-days of highly skilled scientists have been spent in obtaining the necessary scientific data to secure these tolerances or exemptions. Research on a new product now costs from $750,000 to over $1,000,000 and takes three to five years or more. This research is carried out not only by private companies but is also carried out by the land-grant colleges and universities and other institutions of higher learning.

An industry committee, known as the NAC Regulatory Advisory Committee, has been working with the federal FDA and the USDA since 1957. Progress has been made in establishing sound, workable administrative procedures and technical requirements. It is hoped that this kind of progress can be continued.

However, the set-back caused by the cranberry and caponette incidents has raised serious questions about some federal administrative procedures. Until these procedures are corrected, all agricultural commodities which must be protected by chemicals against pest damage in production, transportation, storage or processing are in jeopardy. Under present administrative procedures, all research pertaining to the use of chemicals in or on a food product is now subject to approval or rejection by a small group of people in Washington. It can thus be seen why the administrative policies and procedures of current laws in this field deserve your serious consideration.

Let me put it another way. It is possible today for all the research involving the use of chemicals in or on foods performed in the state of California to be rejected on the basis of inadequacy of data or on an arbitrary decision on policy made in Washington.

For example: Take the policy which has resulted in no tolerances being established for residues of pesticides in milk. In our opinion, this policy has separated milk as a farm commodity which is to be treated differently from all other farm commodities. This is an unrealistic position. There is no more reason why a safe tolerance cannot be established for milk than for any other farm product.

The animal industry in the U.S. is dependent for its feed supply, to a large extent, on many agricultural by-products from processing foods for canning or freezing and from preparing foods for the fresh market. Few of these crops from which the by-products are obtained can be produced without the use of chemical pest control. If the animal industry is to survive, a realistic approach must be made to the solution of tolerances for milk.

As another example, take the Delaney Cancer Clause in the recently-passed Food Additive Law. This clause represents a philosophy which cannot be practically administered. Reports of the President's Scientific Advisory Committee, headed by Dr. George Kistiakowsky, and the Wisconsin Committee, headed by Dr. Conrad Elvehjem, recognize this situation. They have suggested modification of the law to permit interpretation of scientific results by qualified scientists in administering this particular clause. The Western Council of State Governments also supports modification of the Delaney Clause for the same purpose.

What we are dealing with are problems encountered as the result of our rapid technological advances in recent years. As we enter a scientific age, we must recognize that most people cannot have enough scientific knowledge to make decisions involving scientific questions wisely or even in their own best interests. They must rely upon others. Some will believe pseudo-scientists and scientific-sounding mumbo jumbo. Most, we believe, are looking to panels of qualified scientists as you have on your committee for guidance.

Our industry believes—and we believe this quite strongly—that when differences of opinion arise between a chemical producer and the FDA, for example, the solution can best be resolved by recourse to an impartial scientific committee. This provision in the Miller Pesticide Residue Amendment was actively supported by the industry and has been accepted by the National Academy of Sciences. I believe this is the first time such a scientific review provision has been written into law. It is a relatively new idea, and experience indicates a possible need for review of some of the administrative procedures in the operation of the committees.

It is our view that the public will look increasingly to committees of scientific experts to decide troublesome scientific questions—outside of our industry as well as in it—as we make further scientific advances. We all share a responsibility to strengthen public confidence in this means of reaching decisions on scientific questions in the public interest.

Educating the Public

This brings us to the question of educating the public to understand

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scientific advances in their proper perspective.

A series of events on our East Coast relating to mosquito control illustrates this point. For one reason or another, appropriations for mosquito control in New Jersey were reduced a year ago. Attacks against the use of chemical sprays played a part in it, as did a desire for economy and other reasons. The result, however, was a decrease in spraying to control mosquitoes. A serious infestation of mosquitoes developed. The mosquitoes carried sleeping sickness from wild birds to humans, and this resulted in a number of human deaths. The following year expenditures for mosquito control in New Jersey were increased to between $2¼ and $2½ million a year.

This was a tragic way for the people of New Jersey to learn the value of chemical spray programs recommended by knowledgeable scientists. We do not want anyone to have to learn the value of pest control in agriculture by experiencing food shortages that scientific experts affirm would come from undue restrictions on the use of agricultural chemicals.

What can be done? A great deal is up to experts sitting on committees such as yours. You have a tremendous opportunity in your report and conclusions to further the public's appreciation of the proper role of agricultural chemicals in today's civilization.

As to our industry, we are living up to the federal and state laws and regulations governing the manufacture, sale and use of agricultural chemicals.

Individual companies and the industry in general are devoting great effort to educate users of pesticides to use these materials with safety for themselves and for consumers. Our association has a cooperative program with the National Safety Council to this end. We cooperate in the distribution of safety material and other information produced by the federal FDA and the USDA. We promote a strong "Read and Follow the Label Directions" program through radio broadcasts, booklets, brochures, TV featurettes, speeches, posters and literature distributed with industry products.

The Western Agricultural Chemicals Assn. whose headquarters are in California—conducts special schools for salesmen, farmers, crop dusters, radio, and farm press on pesticide safety. Our industry, as well, is conducting a broad program to make national and community leaders more aware of the need for agricultural chemicals, the care with which they are manufactured and used and the thoroughness of the laws enacted by federal and state governments to assure consumer safety.

The Role of Cooperation

Just as cooperation among many groups, private and government, is needed in the manufacture, testing and proper use of agricultural chemicals, so, we believe, cooperation is needed in presenting all the facts about agricultural chemicals before the interested public.

Our biggest job today is to restore national and world public confidence in the American food supply. To accomplish this objective will require the cooperation of industry, farm organizations, land-grant colleges, and universities, government agencies, fish and wildlife services, nutritionists, conservationists and medical men.

In concluding, I would like to quote two paragraphs from a statement made recently by Dr. Frederick J. Stare, chairman, department of nutrition, Harvard School of Public Health. Dr. Stare declared:

"As a physician and student of nutrition for the last 25 years, I should like to state categorically that I do not know, nor have I ever heard, of one single case of ill health in man that has been shown to have been due to the addition of approved additional chemicals to foods. And I said additional chemicals because I wish to emphasize again that all foods and nutrients are composed of chemicals."

Dr. Stare also declared:

"Goodness is still in our foods. The poisons are in the pens and tongues of those who, by peddling misinformation, half-truths, statements out of context, and downright falsehoods, gain temporary notoriety, inflate their own egos, and make a profit, or hope to."

Our industry would like to associate itself with this view.

Oklahoma

OKLAHOMA CITY, OKLA.—July fertilizer sales in Oklahoma amounted to 6,545 tons, or 22 tons less than the same month in 1959. Most popular grade was 16-20-0 with 1,029 tons sold.

Mexican Petrochemical Industry Plans Stepped-Up Production

MEXICO CITY—According to a story in the Journal of Commerce, the Mexican petrochemical industry is ready to carry out a broad program of nitrogen production at several plants in the states of Guanajuato, Vera Cruz and Chihuahua.

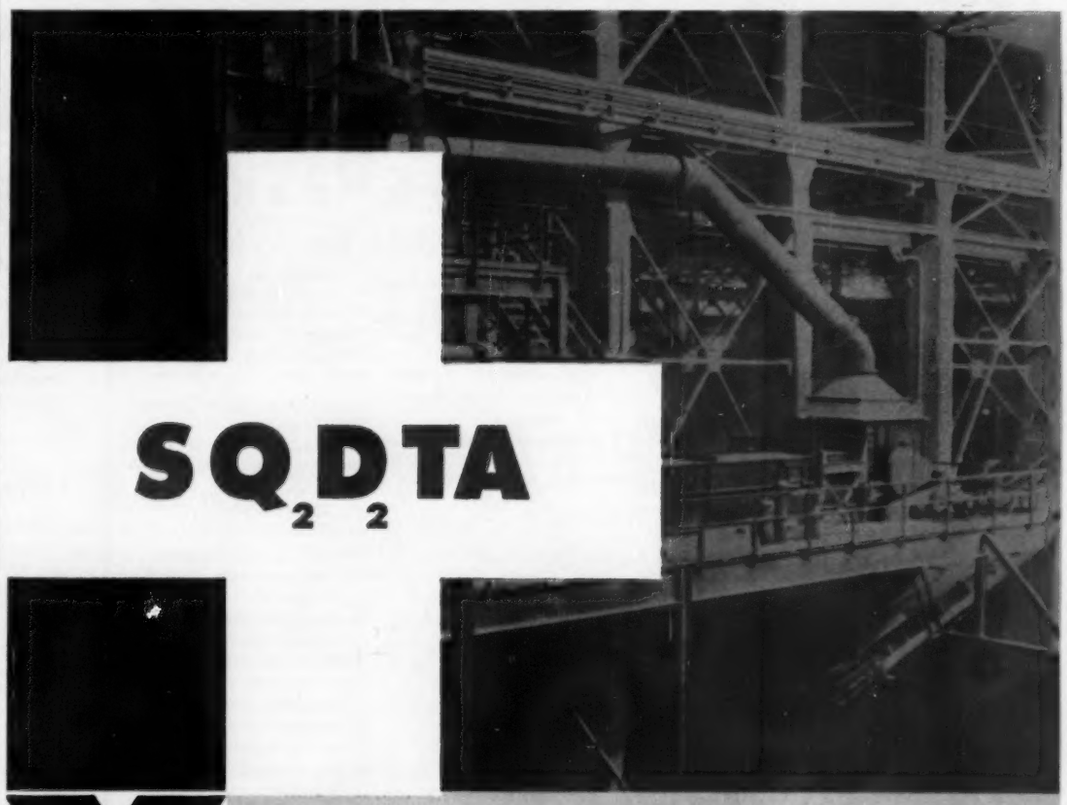
The program announced by Petroleos Mexicanos calls for the production of 200 metric tons daily of anhydrous ammonia at its Salamanca plant in central Guanajuato state. Up to 120 tons daily will be available for conversion to urea, ammonium nitrate, ammonium sulphate or ammonium phosphate, for use in the manufacture of fertilizers, explosives or plastics. The remainder will be available for direct use as fertilizer in the form of liquid gas under pressure or in solution. This plant should be in full operation around May, 1961.

The same plant will produce five metric tons daily of sulfur ammonium to serve as the raw material for the production of poly-sulfur ammonia, used for exhausted soils.

According to the program, a further 200 metric tons daily of anhydrous ammonia will be produced at the Minatitlan plant in Vera Cruz state. The whole of this will be available for conversion to urea, ammonium nitrate, ammonium sulphate or ammonium phosphate. A third anhydrous ammonia plant having a 200-metric-ton daily capacity is planned for the Chihuahua state. It will be constructed when a substantial proportion of the output of the other two installations is finding buyers.

Appointed Vice President

LIBERTYVILLE, ILL.—G. A. Gilbertson, president of the Frank G. Hough Co., Libertyville, has just announced the appointment of Jules C. Laegeler as vice president in charge of engineering.



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A BUSINESS PAPER FOR THE FARM CHEMICAL INDUSTRY

TECHNOLOGICAL ADVANCEMENT . . .

Exchange of Production Experience Proves Valuable in Round Table's 10-Year History

IT WOULD BE difficult to measure accurately the benefits accrued by the fertilizer industry in the U.S. from the industry's annual Round Table meeting which observes its tenth anniversary in November. This event attracts more people from the manufacturing side of the trade than any other meeting, and what's more, provides them with real meat. It is a convention with a minimum of sideline activities, with the objective of good solid information being kept constantly in the foreground.

The history of the Round Table has been recited before, so it is unnecessary to repeat the details. But this much should be kept in mind: that the idea of an open forum for production people of the industry is a sound one . . . that the meeting of minds and exchanging of ideas, in an atmosphere of helpfulness and eagerness to learn, can be most beneficial not only to all those who participate, but to the entire industry as well.

We can recall clearly a certain amount of reluctance in the early years of the Round Table to meet with men from competing companies lest "secrets" should be exposed which would give these competitors some kind of an advantage. Happily, most of this attitude is gone, with the realization that there is much more to be gained from exchanging experiences, than could possibly be lost. And so the Round Table has increased in stature, in numbers attending, and in its over-all usefulness.

Dr. Vincent Sauchelli has been chairman of the group since he, with H. L. Marshall, organized a small group of industry people literally sat around a table to discuss their mutual production problems. Dr. Sauchelli, presently on an assignment in India, will not be present at this year's meeting, Nov. 2-4, in Washington. It will be the first time he has missed such a gathering, but the affairs of the meeting will be handled by Joseph E. Reynolds, Jr., Baltimore, Md., long a prime mover in Round Table affairs.

It is worth noting at this point that officers and other workers in the Round Table are not paid for their efforts, it being strictly a matter of their wanting to contribute to the program. The managements of firms who allow these men to take some time off to handle Round Table affairs also deserve a nod of appreciation from the trade.

We recall the meetings of early days when only a handful of eager registrants was on hand to learn more about their business, and now in later years when the crowd has grown to several hundreds of men who are still just as attentive and serious about the discussions as were those in the smaller groups of the past. Few indeed are conventions where such a large percentage of those registered are in the formal meetings listening intently, taking notes, and participating in question and answer sessions from the floor.

This year's meeting is calculated to build even greater the stature of the Round Table. It will feature panel discussions presenting the viewpoints of basic producers and of users on uniformity of products; and will cover other important phases of production and plant maintenance.

The fertilizer industry has progressed greatly from a technical standpoint during the past ten years. It may be merely a coincidence that this important period of fertilizer technological advancement parallels the time that the Round Table has been functioning, but we have a feeling that the same awareness of the importance of perfecting manufacturing procedures, as illustrated by the growth of the Round Table, has been responsible for a general improvement in fertilizer technology during that time.

Corrosion Control a Key to More Profits for Industry

CORROSION CONTROL in fertilizer plants is a matter of considerable concern to management. The economic picture of corrosion . . . that is the amount it costs the industry each year, is considerable. Profits would come easier if this problem could be licked.

With this as a background, the remarks of a speaker at the recent national meeting of the American Institute of Chemical Engineers seem appropriate to repeat here. R. C. Schueler, of the Phillips Petroleum Co., said that one of the basic reasons for the high cost of corrosion is inadequate design for corrosive environment.

"Some plants are being designed with a firm respect for the possibility of corrosion damage," he said, "while others are being designed merely on guesses and hopes." The engineer then went on to observe: "Management must demand the best results from the process engineer, the design engineer, and the corrosion engineer; but, in turn, management must give full support to these engineers. Without the support of management, most corrosion control programs are doomed to failure.

"Good design practice can result in lower capital costs, fewer shutdowns, less maintenance and usually, the original objective of the project—more profit. It is obvious that the potential savings which can result from corrosion control are being underestimated and ignored by many. It also is obvious that efforts to design against corrosion are not always successful."

Designing for corrosion control involves not only proper selection of resistant materials but also a thorough look at the advantages and economics of each material, he observed.

Here are three basic ways in which he said corrosion might be controlled and each should be examined thoroughly to arrive at the best solution: 1. Change the process stream; 2. Use more corrosive-resistant materials, and 3. place a barrier between the base material and the corrosive fluid.

Mr. Schueler recommended the following procedure for the proper design of a plant or unit to combat corrosion:

- Use available information from original laboratory tests and literature.
- Consider types of corrosion involved, control methods, and demands placed on the equipment.
- Conduct preliminary and planned pilot plant tests.
- Temper final selection of materials for full scale unit with economies.
- Plan to keep good records and plan regularly scheduled inspections.
- Continually evaluate the extent of corrosion.

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INDUSTRY MEETINGS

Oct. 27 — Eighth Annual Grassland Farming Conference, Blake Hall, College of Agriculture, Rutgers University, New Brunswick, N.J.

Nov. 17—New Jersey Pesticide Dealers' Conference, Blake Hall, College of Agriculture, Rutgers University, New Brunswick, N.J.

Dec. 4-7—Winter Meeting, American Society of Agricultural Engineers, Peabody and Chisca Hotels, Memphis, Tenn.

Dec. 5—Washington Liquid Fertilizer Dealers Assn., Annual Meeting, Davenport Hotel, Spokane, Wash.

Dec. 5—Annual Meeting, Washington Liquid Fertilizer Dealers Assn., Davenport Hotel, Spokane, Wash.

Dec. 5-7—Annual Meeting, Carolinas-Virginia Pesticide Formulators Assn., Carolina Hotel, Pinehurst, N.C.

1961

Jan. 17—Annual meeting of Georgia Plant Food Educational Society, Continuing Education Center, Athens, Ga.

Jan. 18-19—Eighth Annual Western Agricultural Chemicals Assn. Northwest Conference, Benson Hotel, Portland, Ore.

Feb. 14-15—Second Annual Aquatic Weed Control Society meeting, LaSalle Hotel, Chicago.

Feb. 15 — "Pesticides Review for Coastal Counties," sponsored by Western Agricultural Chemicals Assn. and California State Polytechnic College, on campus, San Luis Obispo, Cal.

Meeting Memos listed above are being listed in this department this week for the first time.

Oct. 26-27—VPI Fertilizer Salesmen's School, Virginia Truck Experiment Station, Norfolk, Va.

Oct. 26-27—Far West Fertilizer Safety School, Hacienda Motel, Fresno, Cal.

Oct. 27-28—Eastern Branch meeting, Entomological Society of America, New Yorker Hotel, New York.

Oct. 30-Nov. 3—National Association of County Agricultural Agents annual meeting, Hotel Deauville, Miami Beach, Fla.

Oct. 31-Nov. 3—International Crop Improvement Assn. meeting, Denver, Colo.

Nov. 1-2—Michigan Agricultural Pesticide Conference, Kellogg Center, Michigan State University, East Lansing, Mich.

Nov. 2-4—Fertilizer Industry Round Table, Hotel Mayflower, Washington, D.C.

Nov. 3-4—Pacific Northwest Plant Food Assn. 1960 annual convention, Boise, Idaho.

Nov. 4-17—Seed and fertilizer clinics, University of Illinois, Nov. 4, Vandalia; Nov. 15, Macomb; Nov. 16, Dixon and Nov. 17, Urbana.

Nov. 9-11—National Fertilizer Solutions Assn., annual convention, Peabody Hotel, Memphis, Tenn.; Muriel F. Collie, executive secretary.

Nov. 13-15—California Fertilizer Assn., 37th annual meeting, del Coronado Hotel, Coronado, Cal.

Nov. 14-19—Mexican Association of Insecticide and Fertilizer Manufacturers, Merida, Yucatan.

Nov. 21—South Carolina Plant Food Educational Society annual meeting, Clemson House, Clemson, S.C.

Nov. 22—Tenth Semi-Annual Meeting, Manufacturing Chemists' Assn., Statler Hilton Hotel, New York City.

Nov. 28-30—Soil and Crop Science Society of Florida, Fort Harrison Hotel, Clearwater, Fla.

Nov. 28-Dec. 1—Eighth Annual Meeting, Entomological Society of America, Haddon Hotel, Atlantic City, N.J.

Nov. 29—Oklahoma Fertilizer Dealers Conference, Oklahoma Plant Food Educational Society and Oklahoma State University cooperators, Huckins Hotel, Oklahoma City, Okla.

Nov. 30—New Jersey annual fertilizer conference, Rutgers University, New Brunswick, N.J. Sponsored by Plant Food Educational Society of New Jersey.

Dec. 1-2—Ohio Fertilizer and Lime Conference, Agricultural Administration Building, Ohio State University, Columbus, Ohio.

Dec. 12-14—North Central Weed Control Conference, Hotel Schroeder, Milwaukee, Wis. T. W. Tibbets, Department of Horticulture, University of Wisconsin, Madison, public relations committee.

Dec. 14—Louisiana Fertilizer Conference, Louisiana Plant Food Educational Society and Louisiana State University cooperators, Baton Rouge, La.

1961

Jan. 4-6—Northeastern Weed Control Conference, 15th annual meeting, New Yorker Hotel, New York City.

Jan. 5-7 — Eleventh annual convention, Agricultural Aircraft Assn., Inc, Hotel El Dorado, Sacramento, Cal.

Jan. 6-7—Western Colorado Horticultural Society, Annual Meeting, Civic Auditorium, Grand Junction, Colo.

Jan. 9-10—Texas Plant Food Conference, Texas Plant Food Educational Society and Texas A&M cooperators, College Station, Texas.

Jan. 11-13—Agricultural Ammonia Institute, 10th annual convention, Memphis, Tenn.

Jan. 12-13—Arizona Aerial Applicators Assn. 8th annual conference, The Wigwam, Litchfield Park, Ariz.

Jan. 17-18—Third annual Agricultural Pesticide Conference, Purdue Memorial Center, Purdue University, Lafayette, Ind.

Jan. 17-18—Arkansas Plant Food Conference, Arkansas Plant Food Educational Society and University of Arkansas cooperators, Little Rock, Ark.

Jan. 18-20 — 14th Annual Southern Weed Conference, Hotel Soreno, St. Petersburg, Fla.

Jan. 19-20—14th annual Southern Farm Forum, Roosevelt Hotel, New Orleans, La.

Jan. 23-25—Southeastern Branch, Entomological Society of America, 35th annual meeting, Admiral Semmes Hotel, Mobile, Ala.

Jan. 25-26—Symposium on "Effects of Environment on Crop Response to Fertilizers," Tennessee Valley Authority Fertilizer Development Center, Muscle Shoals, Ala.

Feb. 1-2—Soil Science Society of North Carolina Annual Meeting, Williams Hall, North Carolina State College, Raleigh, N.C.

Feb. 16-17 — Annual joint meeting, Midwest Industry - Agronomists, Edgewater Beach Hotel, Chicago.

June 27-29—Twelfth Annual Fertilizer Conference of the Pacific Northwest, Marion Hotel, Salem, Ore. Chairman: B. R. Bertramson, agronomist, Washington State University, Pullman.

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CALENDAR FOR 1960-61

OCTOBER

S	M	T	W	T	F	S
						1
2	3	4	5	6	7	8
9	10	11	12	13	14	15
16	17	18	19	20	21	22
23	24	25	26	27	28	29
30	31					

NOVEMBER

S	M	T	W	T	F	S
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DECEMBER

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JANUARY

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FEBRUARY

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MARCH

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APRIL

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MAY

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JUNE

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JULY

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AUGUST

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SEPTEMBER

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3	4	5	6	7	8	9
10	11	12	13	14	15	16
17	18	19	20	21	22	23
24	25	26	27	28	29	30

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